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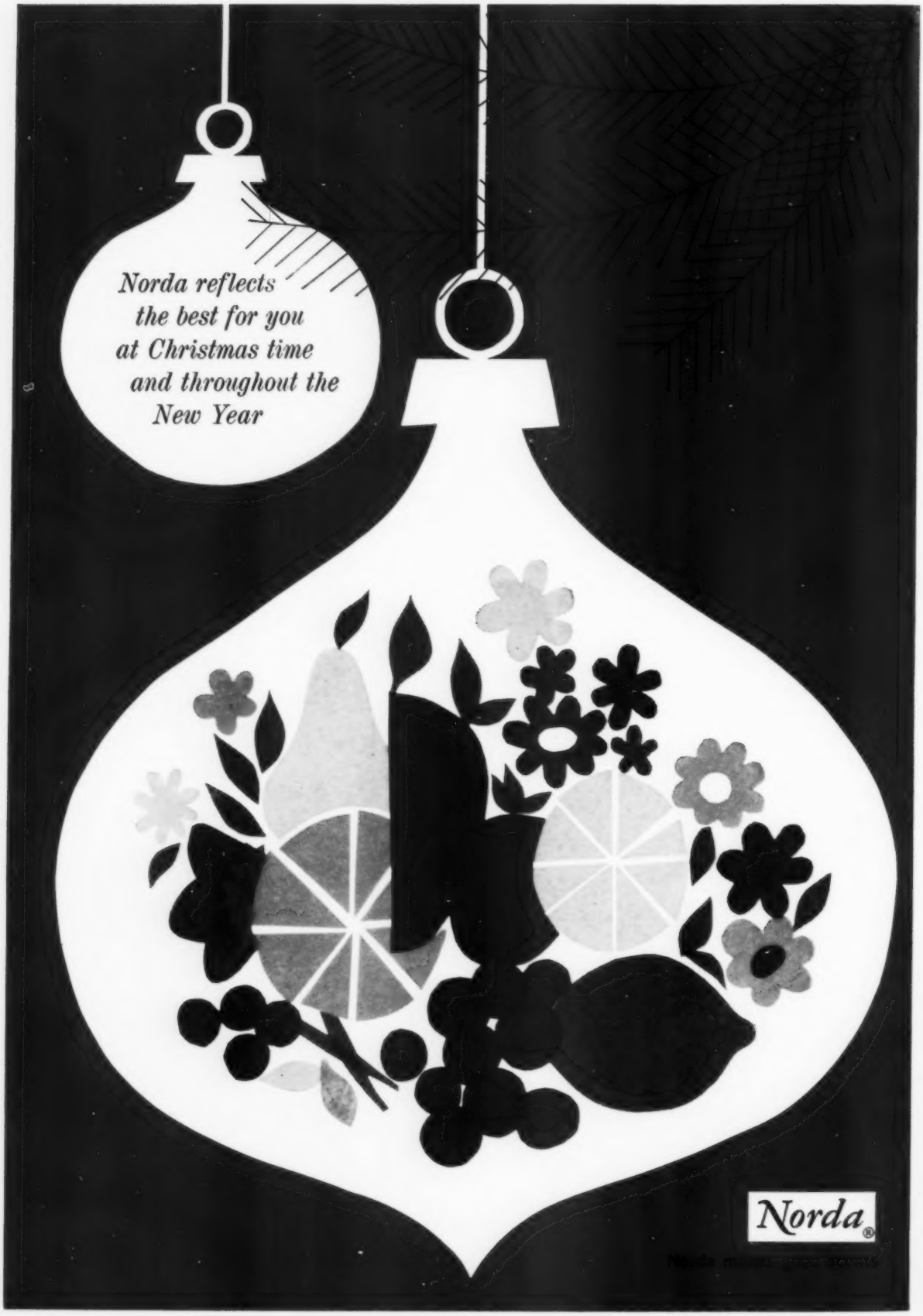
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Contenu

Considérations cosmétiques sur le développement de la pâte dentifrice Crest

Les considérations cosmétiques pour l'élaboration de cette pâte dentifrice ont été particulièrement difficiles, tout spécialement à cause du gout amer de l'ingrédient principal, fluoride stanneux, aussi bien qu'à son manque de stabilité lorsqu'il est mélangé à d'autres ingrédients communs aux pâtes dentifrices.

Page 33

Les dioxydes de Titane et les oxydes de Titane organophiliques.

Les avantages et les désavantages des dioxydes de titane y sont démontrés, avec une explication détaillée de la nature et des propriétés des nouveaux oxydes de titane organophiliques. On y fait ressortir, tout particuliérement, la stabilité des oxydes de titane organophiloques.

Page 35

La lécitine dans les cosmétiques

La lécitine, la plus connue des phosphatides est un élement constitutif naturel de toutes cellules vivantes. On y démontre la structure, les sources, ainsi que les méthodes et les caractéristiques de raffinage. Les effets bénéfiaires de la lécitine, tant dans les préparations cosmétiques que médicales y sont décrites, et l'on y trouve aussi quelques formulations cosmétiques.

Page 39

La réaction du dihydroxyde d'acètone avec les protéines

Le dihydroxyle d'acètone est un cétotriose et passe á travers un grand nombre de réactions associées aux sucres simples. Cette feuille est un rapport des investigations faites sur ce type de réaction Maillard entre le dihydroxyde d'acètone, agissant en tant que sucre, et une variété d'amino-acides et de protéines.

Page 46

La silice pyrogènique dans la chimie des cosmétiques

Le procédé de fabrication de la silice pyrogénique y est décrit, et ses propriétés uniques y sont démontrées et discutées. Le potentiel actuel de ses applications aux produits cosmétiques y est donné, tout en étant accompagné d'explications sur les différentes méthodes.

Page 49

Avec le tour européen.

Page 53

Contenido

Consideraciones sobre cosméticos en el desarrollo del dentífrico Crest

Hubo gran dificultad al considerar los cosméticos para la formulación de este dentífrico, debido al sabor amargo del ingrediente principal, fluoruro estannoso, así como a su carencia de estabilidad al combinarse con los demás ingredientes usados comunmente en dentífricos.

Página 33

Los dióxidos de Titanio, y los óxidos organofílicos de Titanio

Se dan las ventajas y desventajas de los dióxidos de Titanio, así como una detallada explicación sobre la naturaleza y propiedades de los nuevos óxidos organofílicos de Titanio. En particular se menciona la estabilidad de los óxidos organofílicos de Titanio.

Página 35

La Lecitina en los Cosméticos

La lecitina, la más conocidá de las fosfátidas, es un constituyente natural en las células vivientes. Se da su estructura, origen, métodos de refinación y características. Se incluyen los efectos benéficos de la lecitina tanto en los cosméticos en las preparaciones médicas, así como una lista de fórmula de cosméticos.

Página 39

La reacción del dihidróxido de acetona con las proteínas

El dihidróxido de acetona es una queto-triosa y experimenta muchas de las reacciones relativas a los azúcares simples. Este informe reporta investigaciones sobre la reacción de tipo Maillard entre el dihidróxido de acetona, como azúcar, y una variedad de amino-ácidos y proteínas.

Página 46

Sílice pirogénica en la Química de Cosméticos

Tanto el proceso de fabricación como las propiedades particulares de la Sílice pirogénica estan descritas y discutidas. Se dan explicaciones y procedimentos con respecto a su aplicación actual y potencial a los cosméticos.

Página 49

Con la gira por Europa de la SCC.

Página 53

Inhalt

Kosmetische Betrachtungen hinsichtlich der Entwicklung von CREST-Zahnpasta.

Die kosmetischen Betrachtungen hinsichtlich der Formulierung dieser Zahnpasta waren besonders schwierig, als das Ergebnis des bitteren Geschmackes des Grund-Bestandteils, nämlich, eines Zinn-Fluorids, wie auch dessen Mangels an Beständigkeit, wenn mit anderen gewöhnlichen Zahnpasten-Bestandteilen kombiniert.

Seite 33

Titanium-Dioxyde und die organophilen Titanium-Oxyde.

Die Vorteile und Nachteile von Titanium-Dioxyden sind angeführt, begleitet von einer in Einzelheiten gehenden Erklärung der Nature der neuen organophilen Titanium-Oxyde. Als Einzelheit wird die Stabilität der organophilen Titanium-Oxyde hervorgehoben.

Seite 35

Lezithin und Kosmetik.

Lezithin, das bekannteste der Phosphatide, ist ein naturgegebener Aufbau-Bestandteil aller lebenden Zellen. Die Struktur, die Vorkommnisse, Verfeinerungs-Methoden und charakteristische Eigenschaften sind angegeben. Die wohltätigen Endeinflüsse von Lezithin nicht nur in der Kosmetik sondern auch in medizinischen Präparaten sind angeführt, einschlieszlich einiger kosmetischer Formulierungen.

Seite 39

Die Reaktion von Dihydroxyazeton mit Proteinen.

Dihydroxyazeton ist eine Keto-Triose und kann experimentell vielen Reaktionen unterworfen werden, die mit einfachen Zuckern verbunden sind. Dieses Paper berichtet über Untersuchungen, die in das Gebeit der Maillard-Typus-Reaktion fallen, nämlich, Reaktionen zwischen Dihydroxyazetonen als ein Zucker wirkend, einerseits, und einer Verschiedenheit von Aminosäuren und Proteinen, andererseits.

Seite 46

Die pyrogenen Silika in der chemischen Industrie.

Das Herstellungs-Verfahren für pyrogene Silika ist beschrieben, sowie deren einzigartige Eigenschaften beschrieben und diskutiert. Gegenwärtige und wichtige Anweldungen als kosmetische Erzeugnisse sind angegeben, einschlieszlich Erklärungen und Verfahren.

Seite 49

Mit der SCC-Europäischen Rundfahrt.

Seite 53

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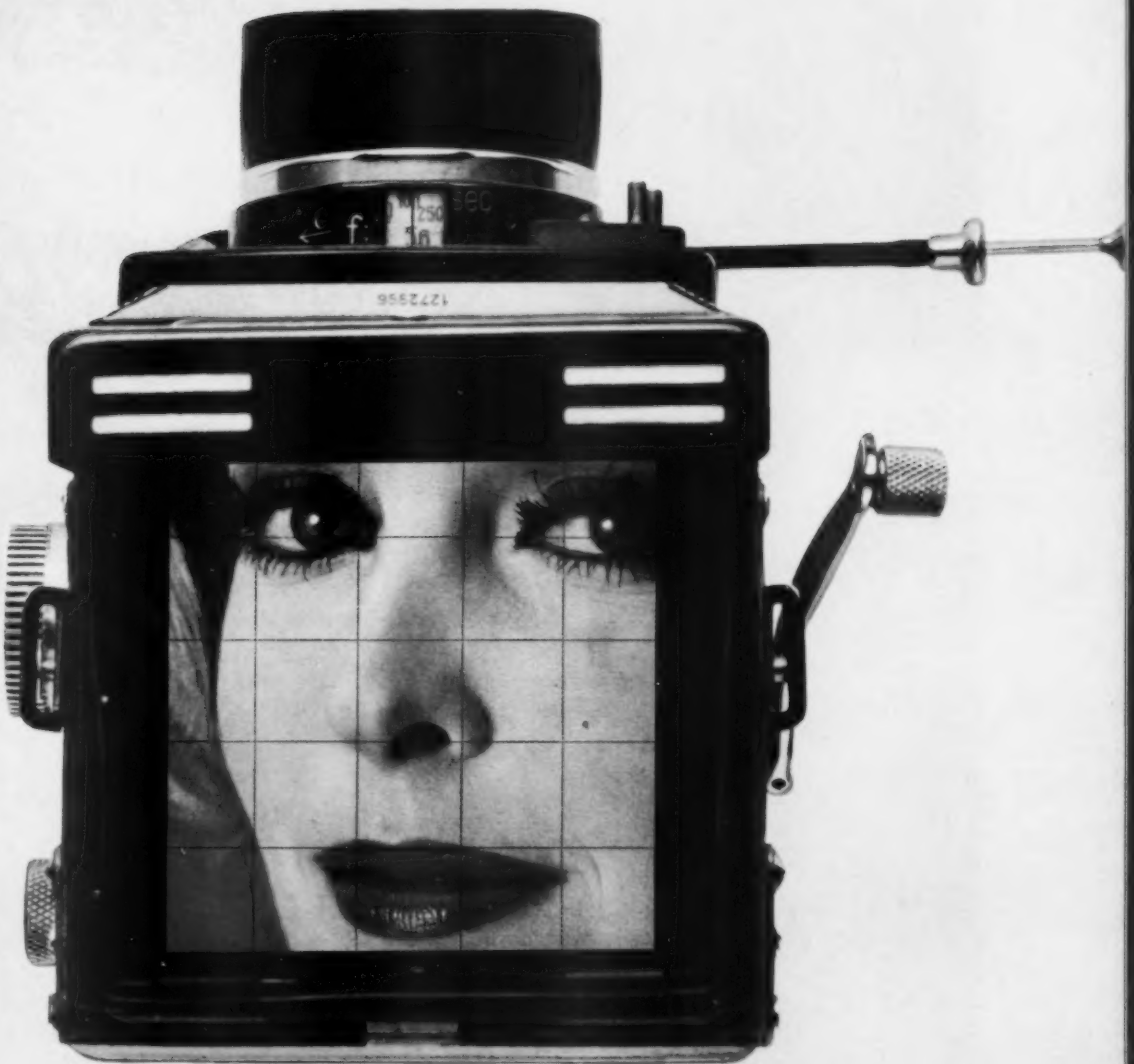

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A. The color rinses, such as you are using, all have the same tendency to rub off. It is therefore one of the characteristics of the product. This is due to the fact that the color does not penetrate into the hair shaft but simply coats itself on the cuticle. Since this property may be somewhat greater in the dry color rinses, you might try making up a liquid solution in which you use a liquid acid such as phosphoric or lactic acid possibly along with a little mordant. Small amounts of magnesium sulphate or aluminum sulphate in your formula could be helpful in this regard. Finally, if the hair is thoroughly rinsed, there will be less rub-off onto pillows.

Q. *In a recent issue you mention adding Panax Ginseng to Royal Jelly cosmetics for over-all effects. I am interested in the possible effects of the Panax Ginseng, but not interested in royal jelly. I am unable to find anything in the literature regarding the topical use of this material. I am also assuming you are referring to the root of Panax Quinquefolium (American Ginseng). I would appreciate data regarding suggested formulas, concentrations and form of Ginseng., G. M. P., Florida*

A. Ginseng is of two types according to a textbook of pharmacognosy written by Youngken. The American variety is referred to as Panax quinquefolium. The other type is the Chinese Ginseng referred to as Panax schinseng. This is different. The composition of the two while apparently similar along certain lines is not the same all the way through. We would not begin to know where to start to suggest the amount to use in a cosmetic preparation. Only the European literature has had any reference. An article by Hans Schwarz in SEIFEN-OLE-FETTE-WACHSE, No. 6, 147 (1959), the March issue, covers this subject and other tonics used in cosmetics. A translation appeared in the August, 1960 issue of AMERICAN PERFUMER.

Q. *We wish to market a paper bag that will be impregnated with an antiseptic liquid which dries quickly. Would you please advise which is best to use, sprayed or absorbed? The enclosed card tells you what we want to say about the product. R. C., Arizona*

A. We do not think that there is any antiseptic strong enough that can be put on a paper that will do what the back of your card says it will do, if it is to be sprayed on paper and allowed to dry. It is possible to kill germs and viruses with fumes but these have to be in adequate concentration and over prolonged periods of time. No antiseptic would do the job. We know of no easier way of getting yourself in trouble with the FDA and FTC than not to be able to prove germicidal statements when made.

Q. *We are using a powdered egg yolk in a concentrate cream shampoo. Please advise whether powdered egg yolk is available in some liquid form. Some time ago we heard there was an oil available containing powdered egg yolks. Please advise and if possible give sources for purchase. R. U., Illinois*

A. You can buy frozen egg yolk or frozen whole egg from any one of the suppliers of frozen foods for the restaurant and bakery trades that you find in your city. A suppliers' name is sent to you by letter. As for egg oil, this is not the same as egg yolk or whole egg. There is an egg oil produced by the Vio Bin Corporation, Monticello, Illinois. It is rather difficult to incorporate it in a cosmetic because of its rather peculiar and unpleasant odor.

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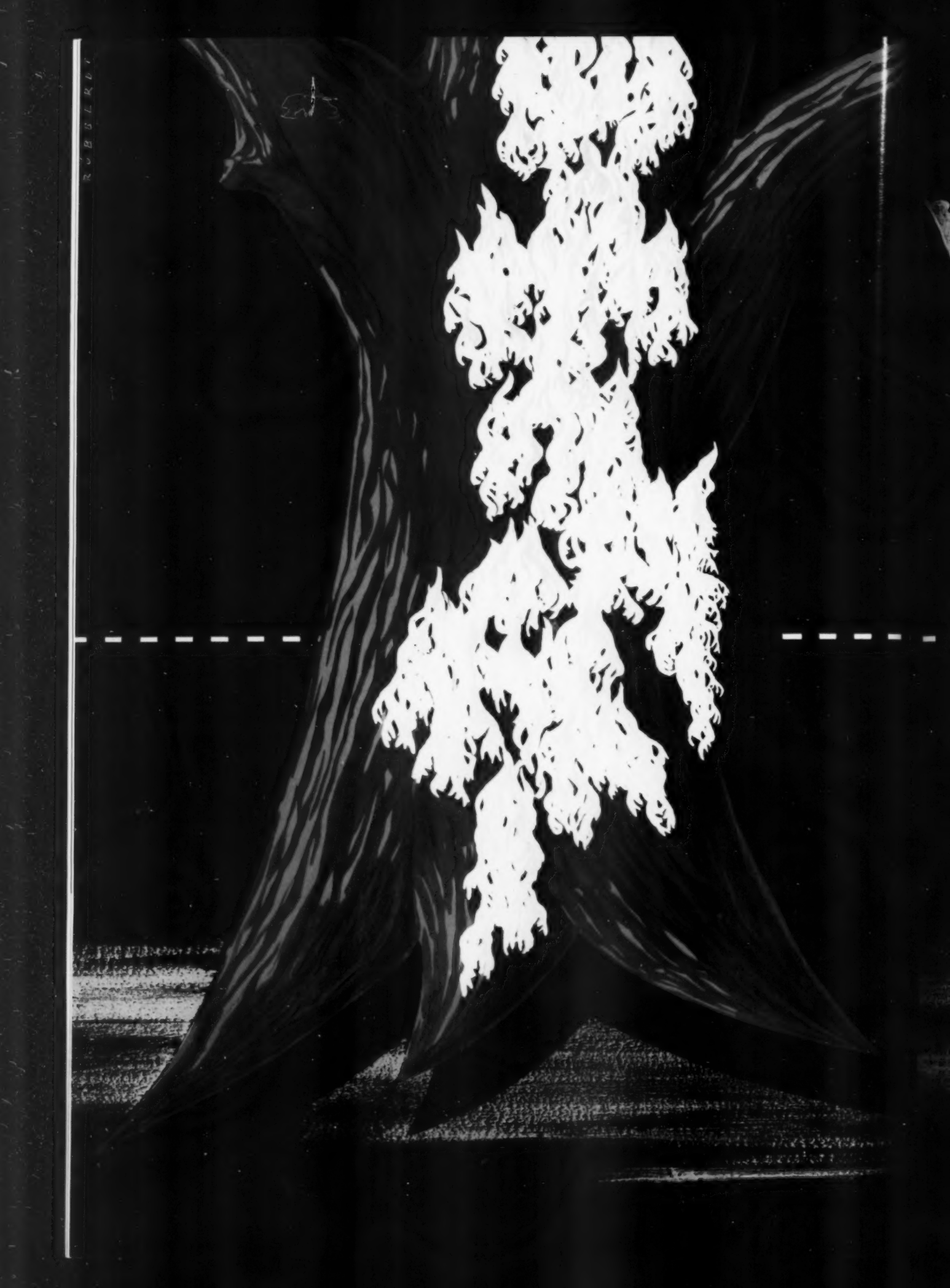

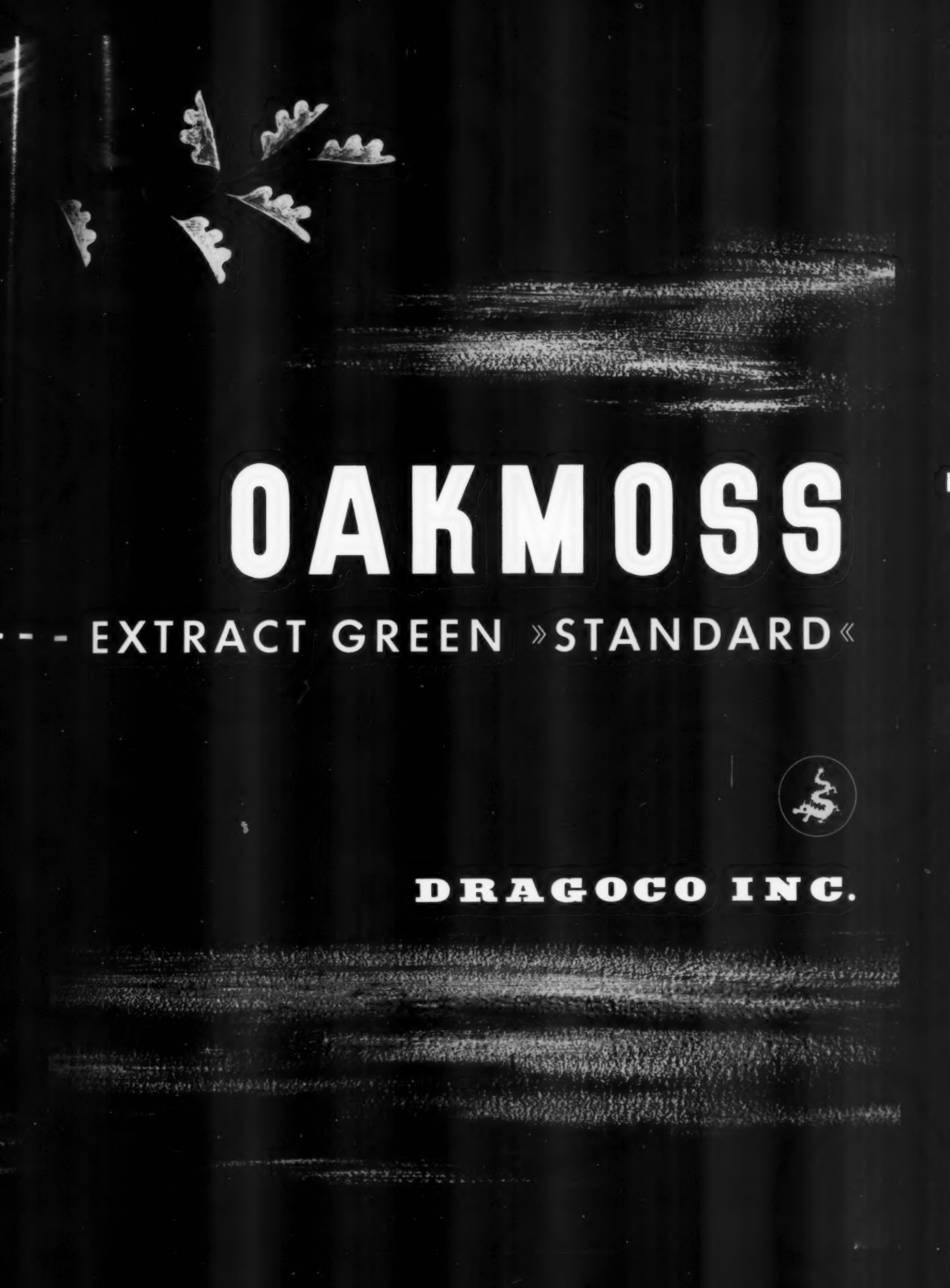
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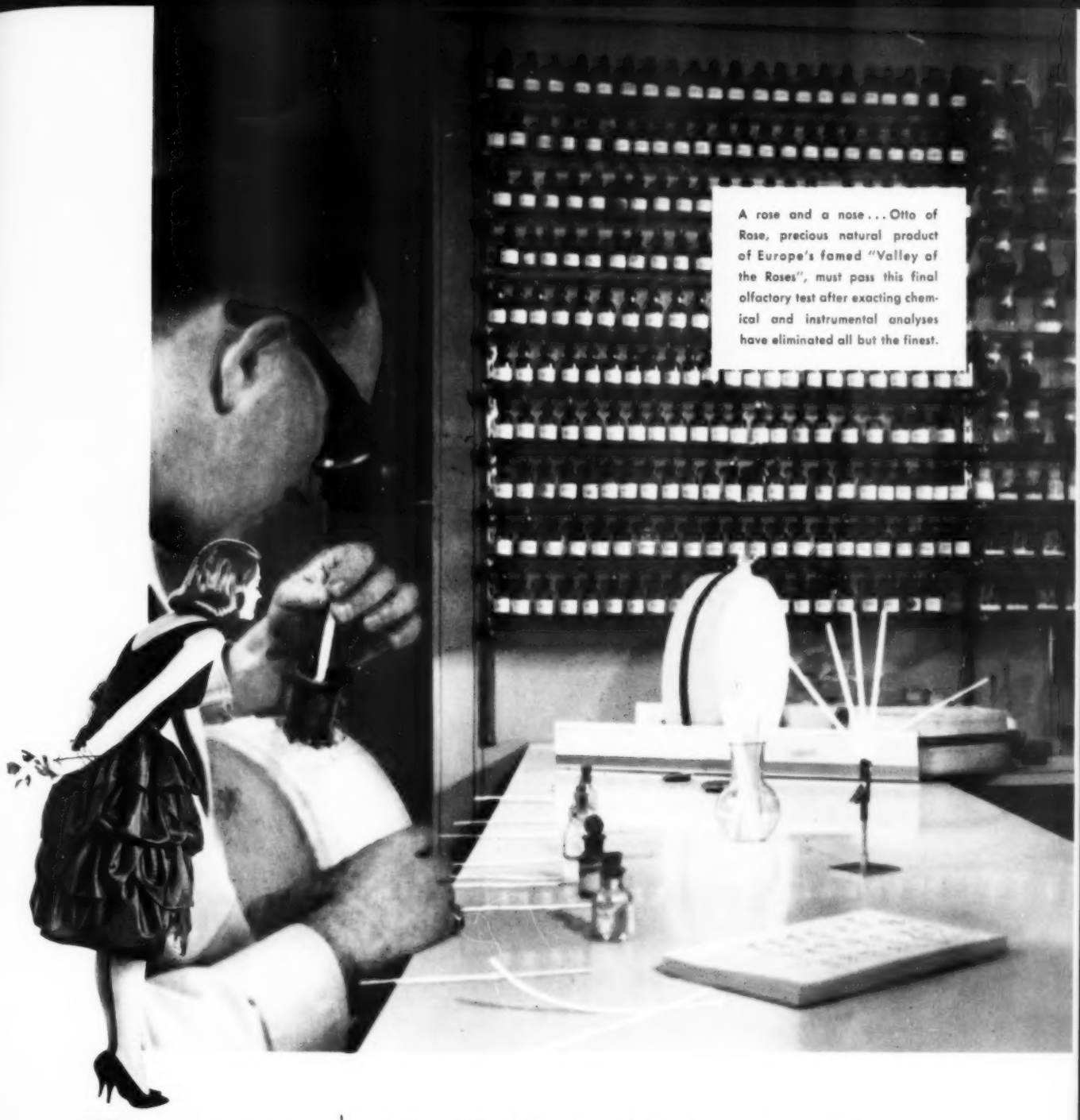

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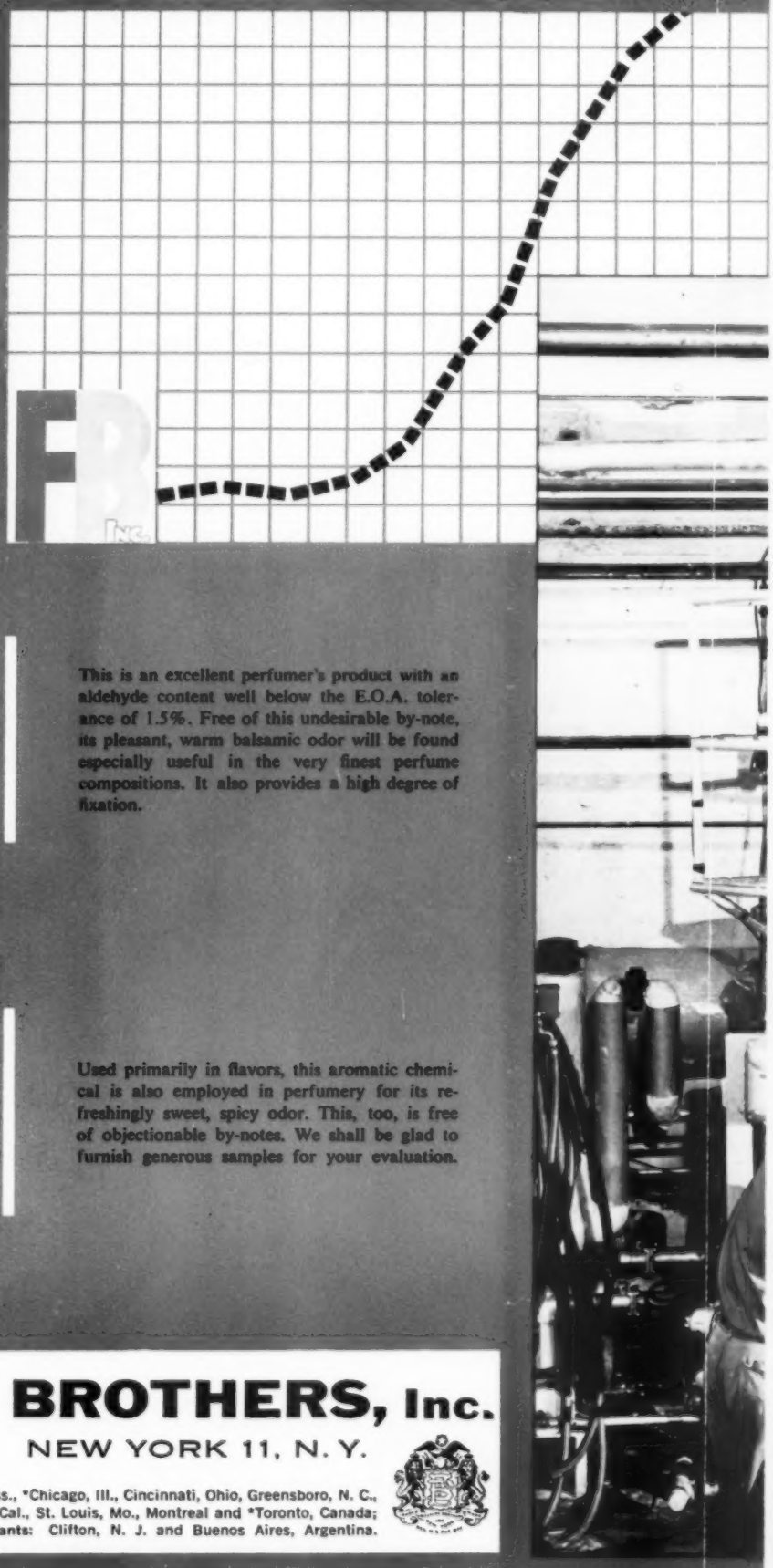

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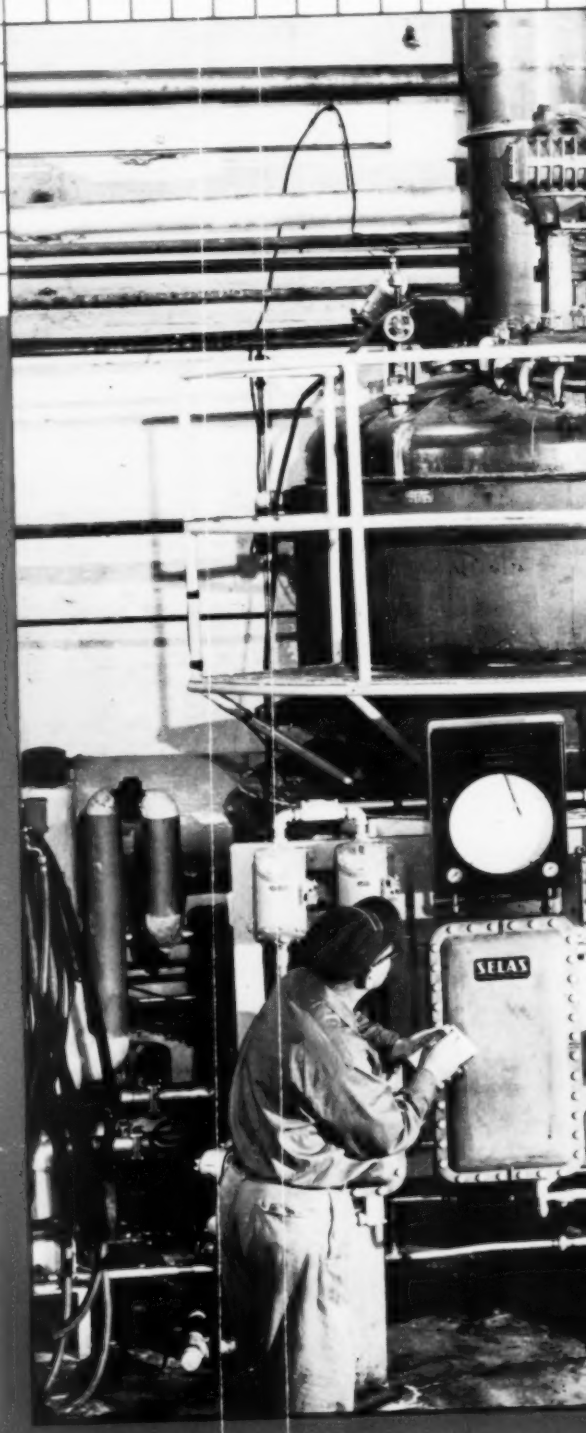

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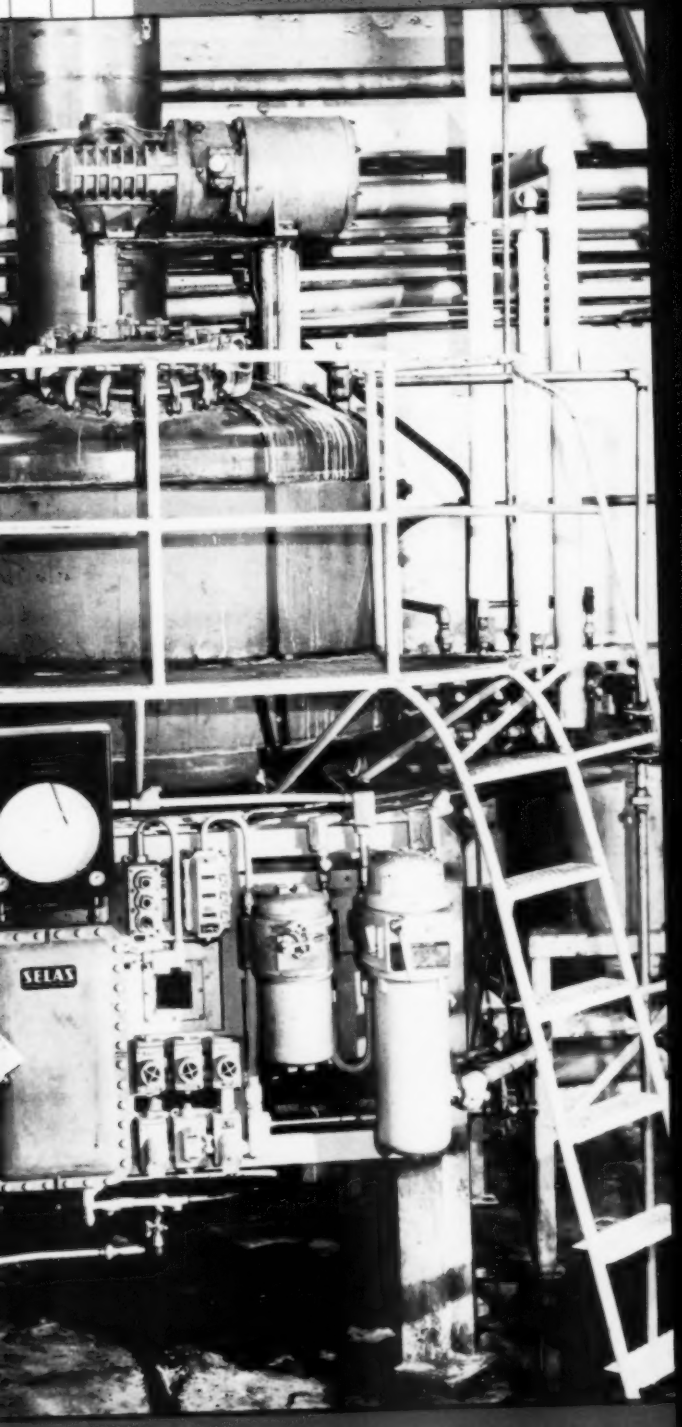

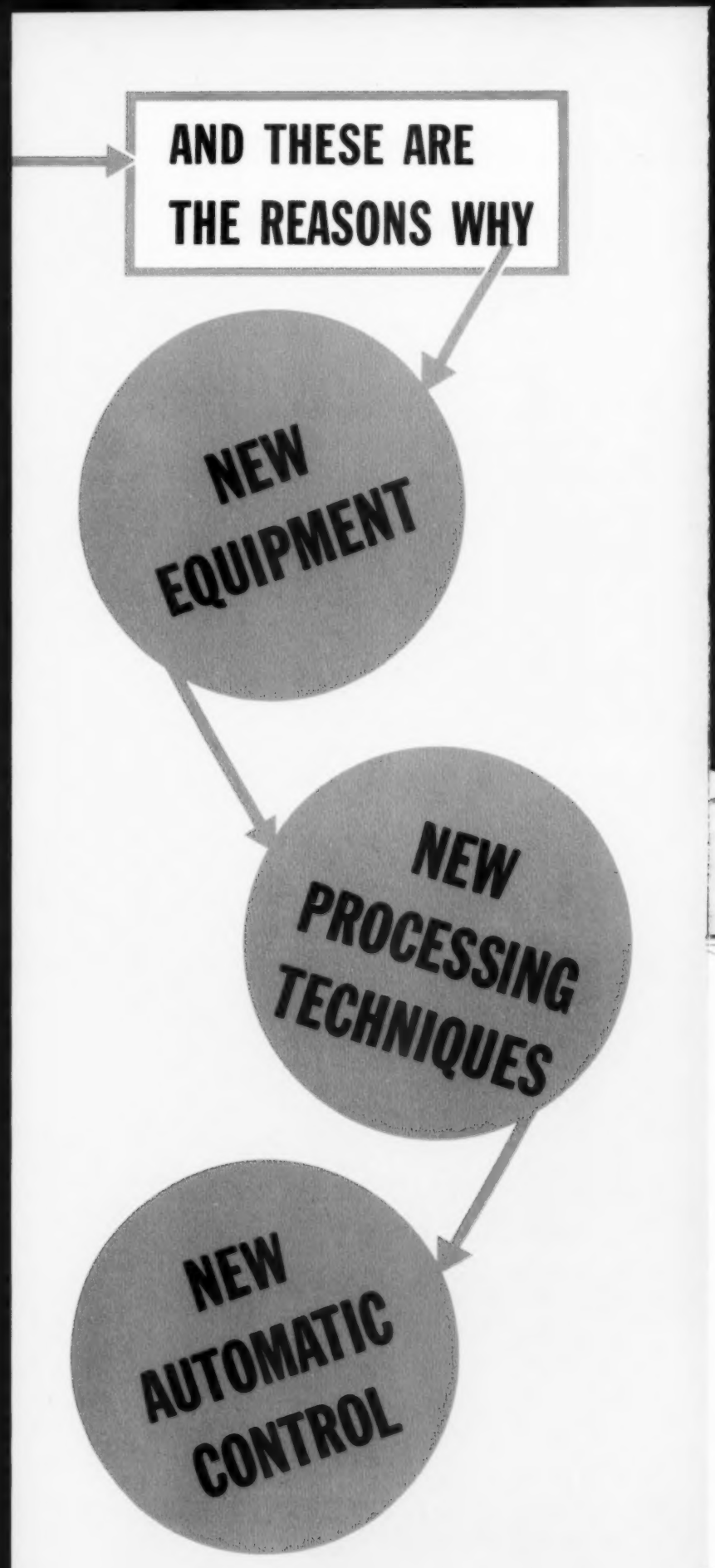
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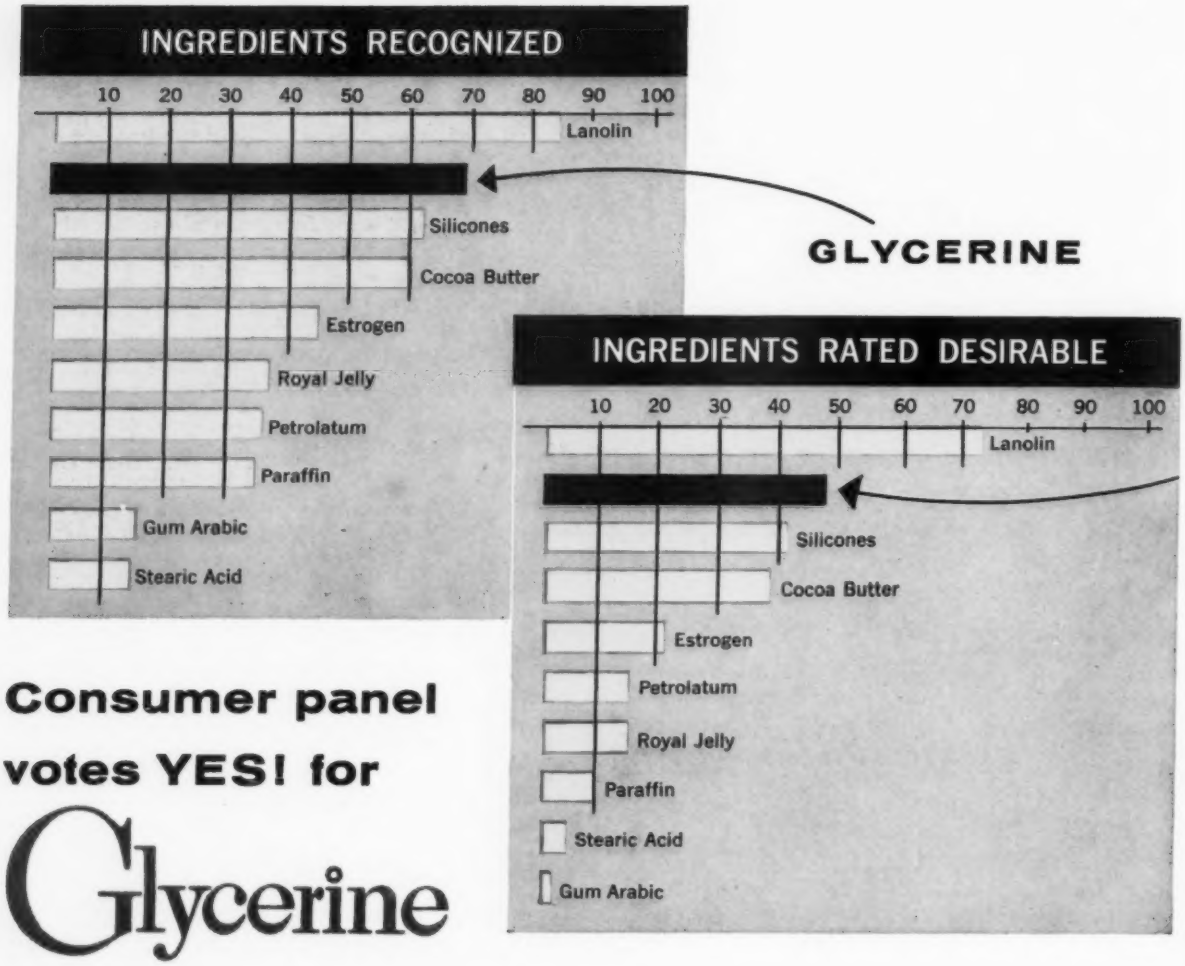

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that give sales a lift

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Maison G. deNavarre, M.S., F.A.I.C.

Notes

Not being a smoker it is easy to point the finger at smokers. At first smokers thought it was the nicotine that was bad. Then it was the tars. Now it appears that nickel is also suspect. It seems that smoking is almost as bad as vice. . . . . John McCutcheon has published a new fifth revision of his New Surfactants booklet now consisting of 127 pages. It can be had for $3.50. . . . . One should have heard Harry Peterson in Montreal make his points in favor of private label loaders of aerosols. It was so sincere it was almost passionate. His reasons all sounded convincing. . . . . A new method of making zinc oxide directly from zinc die castings, eliminating undesirable contaminants of the vapors resulting in a zinc oxide about 1¢ a pound lower in price in the "windy city" area. . . . . Heard George Daughters, District Chief of the FDA in Detroit, speak at a dinner meeting of the Grosse Pointe Exchange Club. Besides being entertaining he didn't tie industry to a rack and begin to pull out the joints one at a time. . . . . It just had to happen! A patent (U. S. No. 2,954,325) has been issued to cover the use of mink oil in cosmetics. . . . . Some of us have known that Ralph Harry had to give up revising his Modern Cosmeticology volumes but it came quite as a surprise to learn that Jack Wilkinson (Lever) is doing the job. . . . . Steve Mayham is to be thanked for having the Mexican equivalent to our Food, Drug and Cosmetic Act translated into English. It will be very helpful to many of us, Steve. . . . . What a shock to learn that FD &C Red #1 may be a carcinogen, according to incomplete results reported by FDA workers. . . . . Have you seen the *clear jelled* lipstick containing only soluble colors? . . . .

Technical Writer

Have just run into a young man, 27 years old, who is a creative technical writer and who will be available after first of the year. The man has had quite a bit of authority delegated to him in the way of specification writing, Technical Reports, analyses of projects, publishing house organs and related projects. Although anxious to locate in the middle Atlantic States, I understand he isn't tied down. He is a journalism major with five years industrial experience and married.

Using Dihydroxyacetone

At this writing, and until the courts decide differently, if you want to use dihydroxyacetone in a skin tanning preparation you have to make arrangements with Drug Research Corporation, 369 Lexington Avenue, New York 17, N. Y., to use the invention covered by U.S. Patent No. 2,949,403 issued August 16, 1960.

Although we thought everyone knew this we keep getting letters asking us the facts. So here it is. If you are using DHA without a license you are begging a patent infringement suit.

p-Hydroxybenzoate Sensitivity

Sarkany, writing in the British J. Dermatol., **72**, 345, 1960, reports a case of sensitivity to propylparaben but not to methylparaben (the respective esters of p-hydroxybenzoic acid). The sensitivity was traced through the use of an antibiotic ointment containing 2.4% methyl and 0.6% propylparaben. Patch tests using the methyl ester alone showed no sensitization.

This is a much higher concentration of the esters than normally used in cosmetics as a preservative or antiseptic.

The same writer quotes a sensitivity reported previously due to the ethyl ester, which reaction has also been noticed by Hjarth.

While the sensitivity is uncommon it points up the fact that 0.6% propyl ester can cause sensitivity, and that the ethyl ester has also caused it, making it worthwhile to examine the matter further. Could it be due to trace impurities? If so, this could be determined by making a more purified form and trying it.

Check List of Best Selling Technical Books

COSMETICS, SCIENCE AND TECHNOLOGY. The editorial board of this encyclopedia cosmetic work is made up of H. D. Goulden, E. G. Klarmann, and Edward Sagarin, executive editor. It is in five parts: I, Scope of Cosmetics (80 pages); II, Toilet Preparations (812 pages containing 800 formulas); III, Manufacture and Technology (214 pages); IV, Physiological Considerations (92 pages); plus preface and complete index. The sixty-five experts who contributed, are a "who's who" of cosmetic chemists in the United States and Canada. 1433 pages. Illustrated. Price $27.50.

HENLEY'S 20TH CENTURY BOOK OF FORMULAS, PROCESSES, TRADE SECRETS—REVISED, ENLARGED EDITION. Manufacturers, chemists and others call HENLEY'S the most valuable book of its kind. Nearly 10,000 formulas, processes, trade secrets. It contains formulas for nearly everything imaginable; new ways of doing things; technical process; so-called trade secrets. It has helped thousands make more from their present business and professions. A single formula may be worth more than 100 times the price of the book. Over 900 pages, completely indexed, cloth binding, $5.25 postpaid.

PRESSURIZED PACKAGING (AEROSOLS). By Alfred Herzka, Jack Pickthall. Although technical problems occur with all types of packages, those which arise with pressurized packages are many and complex. This reference book, by two recognized authorities deals with propellants, containers, valves, filling methods, laboratory procedures, emulsified systems, and perfumes. There is a complete section containing more than 200 formulations, including foods, insecticides, cosmetics, paints, and numerous other products. 400 pages. Illustrated. Price $12.00.

PERFUMERY SYNTHETICS AND ISOLATES. By Paul A. Bedoukian. This carefully compiled volume meets the genuine need for authoritative data on perfumery synthetics. It embraces the history, chemistry, physical and chemical properties, manufacture, uses, and other pertinent data of the principal perfumery compounds; and covers the important perfumery synthetics. A complete index adds to the value of this important work. 488 pages. Price $10.25.

THE HANDBOOK OF SOLVENTS. By Leopold Scheflan and Morris Jacobs. The most useful work of its kind today. Part I covers theoretical aspects and practical attributes such as solvent action, solvent power, evaporation and evaporation rates. In Part II the physical constants of over 2700 liquid compounds are tabulated for easy comparison. 728 pages. Illustrated. Price $10.25.

COSMETICS—THEIR PRINCIPLES AND PRACTICES. By Ralph G. Harry, discussed the skin, its nutrition and scientific care: the hair, its proper grooming, the physio-chemical problems involved in its washing; the teeth and their care, covering the present status of different dentrifices, and the luster-producing properties of ingredients. Much of the information has its source in the research activities of its author, embracing chemistry, dermatology, and microbiology. 786 pages. Illustrated. Price $17.25.

INTERNATIONAL ENCYCLOPEDIA OF COSMETIC MATERIAL TRADE NAMES. By Maison G. deNavarre, brings you reference data you will turn to constantly . . . the most complete listing of all the materials of the world used in cosmetic manufacture . . . including quick concise descriptions of approximately 4,000 materials . . . the names and addresses of the suppliers . . . and a very useful cross-index of the materials and their uses. You will use it when seeking new materials, or substitutes for those you may now be using. 400 pages. Price $7.50.

HANDBOOK OF COSMETIC MATERIALS. (Their Properties, Uses, and Toxic and Dermatologic Actions). By Leon Greenburg and David Lester. Contains alphabetical listing, with frequent cross references, of information on approximately 1,000 substances. For each compound gives: formula (including collateral names), properties, toxic action, dermatological action. Exhaustive bibliography. Essential for manufacturing chemists cosmetic industry, dermatologists, allergists. 467 pages. Price $13.50.

THE ESSENTIAL OILS. By Ernest Guenther, with the collaboration of leading experts, this monumental six-volume work includes: Vol. I, Origin and Development of Essential Oils. 427 pages. Price $9.50. Vol. II, detailed data on several hundred constituents of essential oils. 852 pages. Price $13.50. Vol. III, discusses the oils of the plant families Rutaceae and Labiate. 777 pages. Price $13.50. Vol. IV, covers the widely used oils: citronella, lemongrass, bois de rose, cassia, and others. 752 pages. Price $13.50. Vol. V, takes up other oils of special interest to flavor, perfume and soap manufacturers: rose, ginger, cardamon, anise. 507 pages. Price $13.50. Vol. VI, completes the monographs on individual oils: wintergreen, sweet birch, juniper berries, and the numerous pine oils. 552 pages. Price $13.50.

MANUAL FOR THE ESSENCE INDUSTRY. By Erich Walter. Comprises methods, with formulas for making all kinds of essences for liquors and alcoholic drinks, fruit juices and jams, mineral waters, essences for fruits and other vegetables, essences for confectionery and pastry. Describes raw materials and laboratory practice. Discusses taste and the transfer to foods and beverages. 427 pages. Illustrated. Price $8.25. Published 1916.

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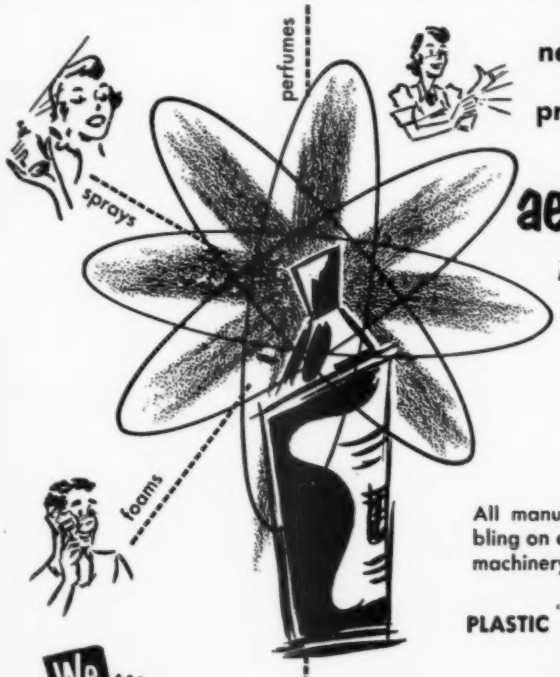

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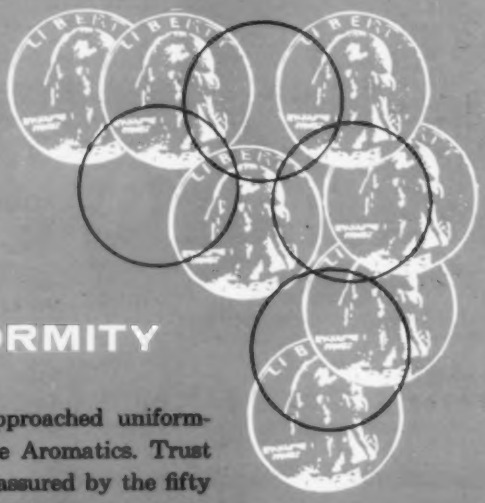

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Cosmetic considerations in the development of Crest toothpaste

By D. S. Barrie
Proctor and Gamble Company

The reecnt recognition of Crest toothpaste by the Council on Dental Therapeutics of the American Dental Association as an effective anti-caries dentifrice has focused attention on the therapeutic nature of the product. What is perhaps not so well known are the unique problems involved in formulating an *effective* toothpaste which could also compete with the well-liked cosmetic dentifrices in the market in terms of consumer acceptability. Clinical experience had shown that even an effective product would not be used consistently unless it had the right consumer properties. Therefore, Crest had to be formulated as a pleasing consumer product as well as an effective therapeutic agent.

Since sodium fluoride had been found to be effective in reducing decay when ingested with drinking water or applied topically, it was natural that it would be the first fluorine compound evaluated as a potential anti-caries agent in a dentifrice. However, early clinical trials of a sodium fluoride toothpaste were not encouraging. It became apparent that a more reactive fluoride was needed. Screening of fluorine compounds began and, after several hundred had been evaluated in laboratory and animal studies, stannous fluoride emerged as the compound of choice. However, stannous fluoride could not simply be added to a conventional toothpaste formulation and remain effective. The fluoride was quickly precipitated by conventional dentifrice polishing agents, such as calcium carbonate or dicalcium phosphate. Then it was discovered that calcium pyrophosphate, a polishing agent obtained by heat treatment of calcium orthophosphate, was compatible with stannous fluoride. 1 Laboratory studies of this combination looked very promising, but the product was still not ready for clinical testing because the formulation was not up to par in regard to consumer properties. The product was deficient in flavor, foaming and appearance. It was time for the cosmetic chemist to come into the picture in order to improve the consumer properties without sacrificing anti-caries effectiveness.

Animals were used in preliminary studies of potential anti-caries agents.

Formulation of a suitable flavor was by far the

In tests among children, both unsupervised brushing (above) and (below) supervised brushing three times each day, were investigated.

biggest problem. For an ordinary dentifrice, the flavor is required to cover the base note introduced by the sudsing agent as well as set the flavor theme for the product. With Crest, the flavorist not only had to contend with these problems, but also had the more difficult task of masking the bitter, astringent note associated with stannous fluoride. Because mint flavors had achieved good acceptance in commercial dentifrices, the mint oils were evaluated first. These oils did not produce the desired effect in the presence of stannous fluoride. Peppermint oil, in particular, developed an off-note upon aging. Many other flavor oils were tested, and it was found that wintergreen, cassia and anise provided the best base note coverage. A tailored blend based on these oils was then compounded. Subsequently, consumer testing showed this flavor to be very well liked, particularly among children.

A similar problem was the selection of a suitable sudser. When used as the sudsing agent in a toothpaste, alkyl sulfate is believed to be responsible for what has been called the "orange juice reaction." This is the bitter taste which orange juice sometimes produces immediately after brushing the teeth. It was found that by combining monoglyceride sulfonate with alkyl sulfate in the proper ratio, the orange juice reaction could be eliminated. This sudser blend has additional value in a dentifrice. Alkyl sulfate is a rapid foaming agent, but the foam dies rather quickly. Monoglyceride sulfonate, on the other hand, foams rather slowly but produces a very stable foam. The combination of the two produces the desired rapid and long-lasting foam.

The other consumer properties which received particular attention were appearance and texture. The first binder used in the formulation was gum tragacanth. It was found that by using carboxymethyl cellulose as the binder, the taste and odor of the toothpaste could be improved. Later, Veegum® was included in the binder system to improve the ribbon texture, particularly upon aging. 2

Consumer testing showed that the Crest formulation was comparable to the best commercial products available. It remained to be seen whether the product was also effective clinically in reducing the incidence of dental caries. The method used to test Crest is in agreement with the standards and procedures suggested by the American Dental Association for clinical testing of dental caries preventives. Two one-year studies of school children who brushed with Crest under normal home use conditions produced decay reduction in the range of 36%-49%, compared to the control groups. 3,4 With this evidence of Crest's usefulness for children, it seemed also worthwhile to test the product's value to adults. In a test with college students, the decay reduction for the Crest group was 34% after two years. 5 During this period, continuing development work had shown that the addition of 1% stannous pyrophosphate was useful in maintaining the effective tin level. 6 This change in the formulation was made, and a new series of three clinical studies was designed to measure the effect of increased frequency of application and combination of Crest with periodic topical stannous fluoride treatments. Once a day supervised brushing with Crest produced a 21% reduction in children after two years, 7 which increased to 46% when brushing frequency was increased to three times per day. In each case, the per cent reduction is compared to a control group who used the control toothpaste, without stannous fluoride, under identical conditions. Crest combined with topical stannous fluoride treatments produced a 55% decay reduction in school children after two years. 8

Based on an evaluation of these clinical studies, the Council on Dental Therapeutics of the American Dental Association recognized Crest as "an effective anti-caries dentifrice that can be of significant value when used in a conscientiously applied program of oral hygiene and regular professional care". 9 This action speaks for itself concerning the efficacy of the product. At the same time, the role of the cosmetic chemist in the development of Crest is appreciated. To be effective, a therapeutic product must be used, and, in the case of Crest, increased usage increases the effectiveness. Clinical experience indicates that even an effective product will not be used regularly unless it is a product people like. Crest's record of clinical effectiveness speaks well for the science of cosmetic chemistry in formulating a therapeutic dentifrice which is unsurpassed in consumer properties.

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Advantages and disadvantages of titanium dioxides; role of the organophilic titanium oxides

By Rene Albo

For the cosmetic technician who is not a chemist, the oxide of titanium is a common white powder with high covering ability, a little of which we introduce everywhere; dentifrices, soaps, powders, lipstick, creams, milks, foundations of various dyes. (To the trained chemist it is far more than this, however.)

Besides the definite advantages, the disadvantages of using titanium dioxide are numerous and the means of remedying them hardly effective.

Happily there exist the very pure oxides of titanium (anatase and rutile) that have undergone a special surface treatment which modifies their physio-chemical behavior and gives them a group of interesting properties which are examined herein.

These advantages are already largely utilized in many industries, and we shall emphasize especially their usefulness in cosmetics. They are the organophilic oxides of titanium.

Origins and the obtaining of TiO_2

Titanium is very abundant in nature, but in low concentrations, about 0.6% in eruptive rocks.

The principal mineral is ilmenite, a sort of black sand composed of iron and titanium oxides.

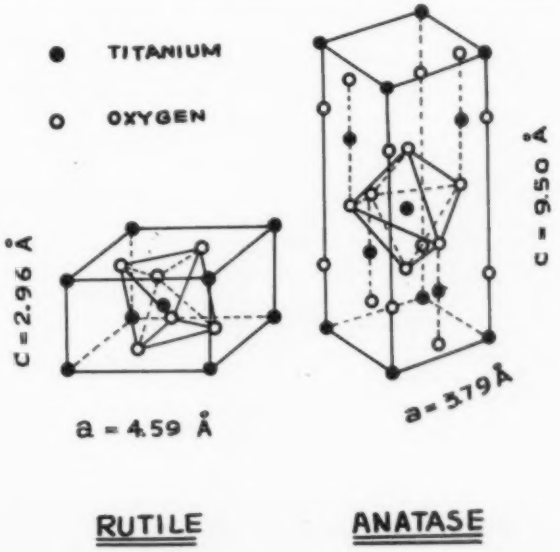
Other titanium bearing minerals are rutile, brookite, and anatase. They are found in Norway, Senegal, Canada, the United States, and Brazil.

In extracting TiO_2 from ilemite, the latter is ground to powder, to which about double its weight of 95% sulphuric acid is added and heated. Iron and titanium sulphates are obtained. The iron sulphate is eliminated by crystallization on cooling. The titanium sulphate diluted, heated, then submitted to hydrolysis. It precipitates as a hydrate of titanium having the formula approximately $Ti(OH)_4$. This product, insoluble in water, is carefully purified, filtered, then calcined in ovens at 900°C. Anatase is obtained in this manner.

In order to obtain the other crystalline form, rutile, the processing tanks are seeded with rutile, thus controlling the crystallization in the direction desired. We distinguish between the two varieties by their different reflections of x-rays.

General properties of TiO_2

The oxide of titanium crystallizes in three forms, two of which are used industrially: anatase and rutile.



Translated from COSMETOLOGIE, No. 24, February, 1960, by Angela Morand, with permission of the publisher.

These two crystalline forms are chemically identical, but have a different index of refraction and specific gravity. The specific gravity of anatase is 3.85, of rutile 4.18.

TiO_2 is a titanic anhydride, homologus of SiO_2; and, like it, has the tendency to polymerize into giant molecules.

It resists acids, alkalies, reducing and oxidizing agents at ordinary temperatures.

The physical properties differentiate the two forms, especially their crystalline structure (see figure).

Anatase has a whiteness more bluish and more dazzling than rutile. It has a lower covering power than rutile.

From the point of view of ability to cover, 1 kg. of rutile is equivalent to:

1 kg. 250 of anatase
5 kg. of lithopone at 30%
6 kg. 500 of ZnO

The particles of TiO_2 of both forms have a diameter of 0.3 to 0.5 μ approximately.

Use of the oxide of titanium in cosmetics

a) *Analytical character*

Microscopic fineness: comparable to standard.
Color: pure white, light blue (anatase), or yellowish (rutile).
Feel: rugose, hooked, "fat".
Apparent density: 0.9-1.
%TiO_2: not < to 99% ("cupferron" method).
Suspension in distilled water pH 6-7: very good, opaque milk (anatase), mediocre (rutile).
Neutrality: pH 6-7.
1 g of TiO_2 suspended in 10 cc of distilled water pH 6-7 + 2 to 3 drops of bromo-thymol blue: should be greenish—If yellow, too much acid, pH<6—If distinctly blue, too much alkaline, pH>7.6.

In general, the form most employed in cosmetics is anatase, undoubtedly because of its whiteness.

b) *Advantages*:

A great advantage of TiO_2 for the products which contain it, such as lipstick, is its innocuousness; let us remember that we use anatase as a medication for certain gastro-intestinal ailments.

The covering power, the fineness, the exceptional whiteness of TiO_2 are appreciated for good reason. We can also cite its adherence, its chemical inertness, unfortunately, as we are going to see, it has a strong physio-chemical activity which is often the cause of serious damage in beauty products.

c) *Disadvantages*

In a general fashion, anatase or rutile, TiO_2 because of the fineness of its particles, and by the immense surface area exposed to air, absorbs great quantities of it which it introduces into the product at the same time it acts as an oxidizing agent or as a catalyst.

For example, if a fatty body with a double bond, like oleyl alcohol is placed in a white glass closed flask exposed to the light, the Lea indicator passes from 3 to 6 in a month, then to 15 in six months. On the other hand, with this same oleyl alcohol kept under the same conditions but containing only 1% of anatase in suspension, the Lea indicator passes from 3 to 25 in a month, then to 80 in six months. There are similar observations for castor oil. It is very important to note that if the fatty body to which we add the anatase contains a normal dose and we use a phenolic antioxidant such as propyl gallate, we observe a yellowing immediately, then a slight browning. There is probably partial oxidation of the antioxidant which is absorbed by the TiO_2, which we see precipitated as a clear brown residue while the supernatant liquid remains colorless.

In the textile industry, especially silk, the properties of TiO_2 are well known, but what we seek for silks is a disadvantage for lipstick. For example, TiO_2 is sensitive to light; it provokes discoloration. It has a tendency to turn numerous colors to blue, to precipitate polishes.

We are now going to review the disadvantages proper to certain cosmetic products.

1) *Milks, creams, various white emulsions.*

Yellowing, then slight browning in the presence of phenolic antioxidants such as propyl gallate, somewhat reduced in the presence of a chelate.

In the absence of an antioxidant, there is no browning, but rancidity is accelerated.

Browning resulting from the introduction of TiO_2 seems particularly paradoxical, it having originally produced whiteness.

2) *Tinted bases, emulsified rouges, and similar products*:

Whitish "clouds", precipitation of pigments, becomes rancid, turns to blue.

3) *Ordinary and pressed powder.*

Turns blue, caking (floury).

4) *Nail polish.*

Precipitation of the pigments.

5) *Lipstick.*

Whitish clouds on the red or a dull film, dullness, clear shades turn blue, discoloration, progressive loss of vividness ("la griffe") with time, acceleration of rancidity.

We can also observe the discoloration of rouges *within* their plastic containers when these are exposed *closed* to daylight, if these containers have TiO_2 in their contents. If they are strongly colored: iron oxide, carbon black, various pigments, the discoloration of red pigments is not produced, although the product contains TiO_2.

In spite of the solid advantages, the disadvantages are serious, which would make us measure the importance of TiO_2 when we know that the latter carry a solution to all the previously cited difficulties.

Organophile oxides of titanium

These oxides which we shall call AO (anatase organophile) and RO (rutile organophile) are in the form of a white powder (RO is a little more yellowish), of an apparently low density with a fairly slippery feel resembling talc.

The percentage of TiO_2 is high ± 99%.

These oxides have undergone a special surface treatment: each particle of TiO_2 is coated by a mineral substance of a kind of silicate of magnesium, and precipitated "in place." Then we chemically fix the organic radicals. These are solidly "hooked" and cannot be eliminated by a solvent.

This surface modification brings a profound change in the physico-chemical behavior of this TiO_2, to form an extraordinarily organophilic mineral powder.

Properties

These oxides have an exceptional tendency to disperse themselves in the midst of polar or non-polar organics, in many varied liquids like vegetable and mineral oils, solvents: alcohol, benzene, butyl acetate, etc. Their sedimentation is extremely slow, although that of ordinary TiO_2 is almost instant. At the same time, it is insoluble in water.

We are going to see that it is possible to solve pigment problems practically unrealizable otherwise.

The most striking fact is that the eventual blue character is practically abolished. There is no coloration in the presence of a fatty body protected by a phenolic antioxidant, which seems to demonstrate that the treatment of the surface prevents TiO_2 from acting as an oxidation catalyst. The dullness found in many lipsticks is eliminated at the same time.

If we review the principal cosmetic products, we note that the disadvantages cited earlier no longer exist due to the special protection of each particle of TiO_2 and its remarkable ability to disperse.

1) Milk creams.

No yellowing nor acceleration in rancidity.

2) *Tinted foundations, rouge.*

No more cloudiness, acceleration in rancidity, turning blue, nor sedimentation of pigments.

3) *Ordinary and pressed powder.*

No more turning blue, softer touch, opaque film not floury.

4) Nail polish.

AO and RO used with special adjuvants are perfectly dissolved by the solvents, which for polish, should considerably improve the suspension of the pigments.

5) *Lipstick.*

No cloudiness, dullness, turning blue, nor increase of sensitivity to light of eosins, nor abnormal discoloration nor increase of speed of rancidity, better retention of vividness in an age of indelibles.

To appreciate objectively the special properties of organophilic oxides of titanium, here are three spectacular tests:

1) In a test tube half full of distilled water, place a pinch of AO. Shake it; the powder is insoluble and remains obstinately on the surface. If we add a few cc's of a heavy solvent such as carbon tetrachloride, perchlorethylene, etc., all the powder is precipitated with the solvent at the bottom of the tube. The solvent layer is a pretty opaque white due to the homogeneous powder suspension in it, while above, the water is clear.

This phenomenon of preferential solubility is very important. It demonstrates the extraordinary ability to disperse suggesting an important improvement in the suspension of pigments in nail polish.

On the other hand, the best heterogeneous mixtures such as emulsions (milks, creams, foundations, etc.), of such treated pigments re-unite in the fatty phase rather than in the aqueous phase. It is important then, at the outset, to avoid all miscalculation, to disperse them in the fatty phase; otherwise, they slowly provoke granulation, sedimentation, etc. On the contrary, an ordinary oxide, not treated, such as anatase, should be dispersed in the medium by which it is most wetted; that is to say in the aqueous phase.

It is to show that the organophilic oxides are very adherent to the skin which, outside of cosmetics, can be of interest to pharmacists (soaps, powders, milks, creams, etc.).

2) If we pour into two test tubes, a little castor oil, or another liquid fatty body, protected from oxidation by a phenolic antioxidant such as a propyl gallate or the N.D.G.A., then add to one of the tubes a pinch of ordinary anatase, we will see immediately, with little shaking, this powder takes, on contact with oil, a clear maroon color which indicates partial, immediate oxidation of the antioxidant, a sign of potentially a rapid oxidation of the oil.

In the other tube, we add a pinch of organophilic anatase AO: it remains perfectly white even when heated: there is no oxidation of the antioxidant, no discoloration. We understand that such a fatty body, in the presence of a special pigment, can remain normal.

We can recall the flour-like paints: under the influence of light, air, humidity, oxide of titanium, especially anatase, acts as a catalyst of oxidation which destroys its responsiveness at first superficially, leaving the pigments and charges without cohesion from which comes this dry, powdery appearance.

Rutile with its very compact crystalline structure, because of its different absorption of the U.V. is much more stable than anatase in the atmosphere in the presence of light.

3) To demonstrate in a precise and rapid fashion that the organophilic oxides provoke neither discoloration, bluing, nor becoming rancid, we can proceed with the following test (with any paste of lipstick freshly prepared but containing oxidizable oils). We take 100 gr. of this paste and mix by rubbing together with 5 gr. of ordinary anatase (not treated) and 0.2 to 0.3 gr. of a lake of eosin or of rhodamine for example (for a pale color). We run it on a thin sheet about 5 mm thick and expose it to ordinary light on a table, covering half of the sheet with an opaque paper. At the outset, if we have used a lake of rhodamine, the sheet is uniformly a pale rose. In 48 hours, the uncovered part completely turned blue (we kept a small part in complete darkness as a control). Moreover, a rancid odor has appeared. There was then at the same time oxidation, discoloration, and turning blue.

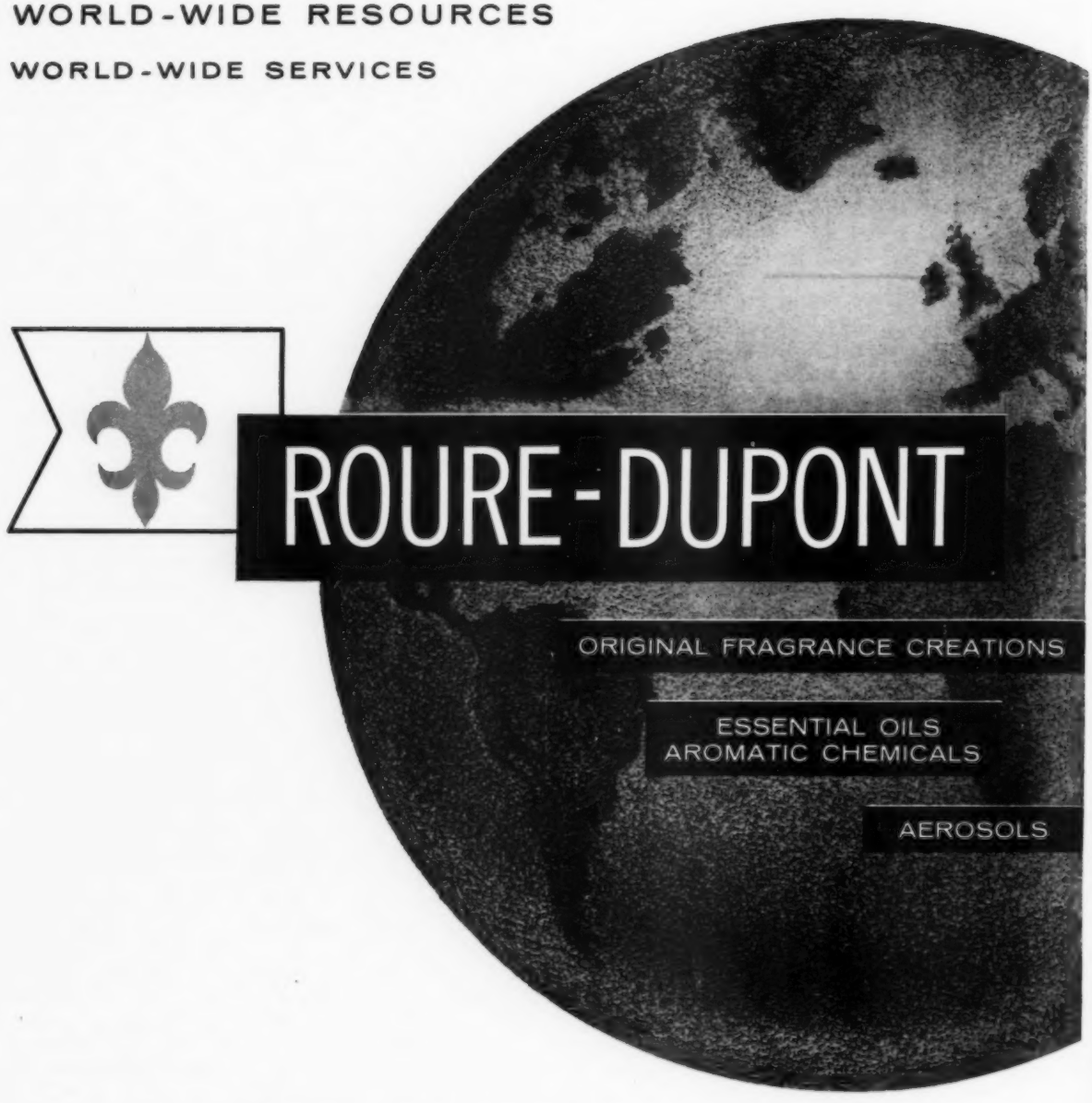
The test is repeated under the same conditions, but with anatase AO. We note at the end of 48 hours: neither turning blue, nor discoloration (it can happen, but only faintly), nor rancidity. These observations are, it seems, sufficiently eloquent for those who are concerned with the inhibitory properties of treatment of the surfaces of oxides.

Conclusions

We can see by these examples, neither exaggerated nor limited, that the use of titanium dioxide AO and RO is advisable in cosmetics. There is no reason for cosmetic chemists failing to draw, in their turn, the many benefits from these remarkable organophilic titanium dioxide pigments.

WORLD-WIDE RESOURCES

WORLD-WIDE SERVICES



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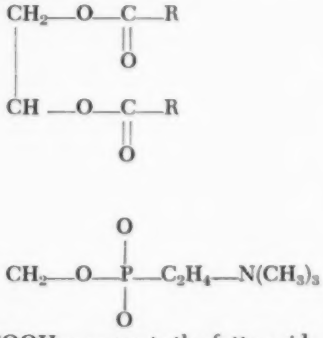
Lecithin in cosmetics

By Harold Crooks
Crest Laboratories, Inc.

Lecithin is the best-known member of the phosphatides and is a natural constituent of all living cells. It may be considered as a diglyceride in combination with phosphoric acid and the base choline. The structural formula of lecithin may be represented as follows:



in which R.COOH represents the fatty acids.

Most commercial lecithin is derived from soybeans by means of solvent extraction, using hexane. Odor and taste of the phosphatides are removed by steam distillation. Phosphatides of light color are obtained by bleaching with hydrogen peroxide or benzoyl peroxide.

Pure lecithin is a yellowish-white waxy substance which oxidizes rapidly on exposure to air, attaining a dark-brown color. Commercial lecithin consists of approximately 70% of phosphatides in a neutral carrier of soybean oil and is stable for many years.

The phosphatides dissolve very readily in ethyl and petroleum ethers, benzene, chloroform, and in varying degrees in other organic solvents. The oil carrier of commercial lecithin may be removed by extracting with acetone in the cold, in which solvent the phosphatides are insoluble. The lecithin fraction of the oil-free phosphatides may be concentrated by extracting with ethyl alcohol, thus effecting a nearly complete separation from the cephalin fraction in which solvent the latter is nearly insoluble.

Lecithin readily forms colloidal solutions with water. These solutions require a preservative, such as the Parasepts. The lecithin is readily precipitated from such solutions by salts with divalent cations such as calcium and magnesium.

Lecithin favors oil-in-water emulsions and lowers the interfacial tension between oil and water, making it an ideal adjunct to cosmetic preparations. The isoelectric point of pure lecithin has been stated by some workers to be 6.4, others listing a figure of 7.5.

Lecithin is not compatible with strong acids and alkalies, being hydrolyzed rapidly on heating and slowly in the cold. The hydrolysis of lecithin yields glycerophosphoric acid, choline and fatty acids. It may be hydrolyzed by reacting with sulfuric acid, hydrochloric acid, barium hydroxide, etc. Hydrolysis in alcoholic reagents effects more rapid and uniform hydrolysis. The natural sugars of the phosphatides will be found in the aqueous phase of the hydrolysate. The sugars are not ordinarily a chemical part of the lecithin. During the reaction of phosphatides with hydrolytic agents, the fatty acids hydrolyze first which in basic medium form soaps that may be reacted with mineral acids to yield free fatty acids. In acidic hydrolysis, the free acids are formed directly. Esters are formed in the alcoholysis of phosphatides.

Lecithins containing unsaturated fatty acids are readily halogenated. The regular commercial lecithin from soybeans with a carrier of soybean oil possesses an iodine value of approximately 95.

Hydrogenation of lecithin in alcoholic solution using platinum or palladium catalyst yields a colorless, stable, nonhygroscopic compound which is less soluble than ordinary lecithin. The fatty acids comprise about 70% of the lecithin molecule. Commercial phosphatides or lecithins may be rendered more fluid by the incorporation of fatty acids such as stearic acid or fatty acid esters such as methyl oleate.

Lecithin combines with acids and bases and certain salts of the heavy metals such as cadmium chloride, platinum chloride and mercuric chloride.

As lecithin is a natural component of the living cell, its use in cosmetics is definitely indicated. It has been suggested that the permeability of the cell to certain materials is a function of the phosphatide content of the cell. Mayer and Schaeffer found that the liquid phosphorus content of most organs did not change markedly either in inanition or over-feeding and that there is a considerable constancy in the cholesterol content of various tissues. The interpretation follows that there is, within limits, an irreducible minimum of lipids which are such an integral part of the protoplasm that they cannot be released even in starvation.

The skin surface is reported to contain about 1% of phosphatides in the lipids. The phosphorus content of skin which is undergoing healing is stated to increase to a maximum and then decline. With advancing age, the unsaturated phosphatide content of the brain and nervous system diminishes, whereas the saturated phosphatides do not. Evidence has been obtained that phosphatides may be absorbed intact.

Much work has been done on the chemical and physical modification of the commercial phosphatides, resulting in products possessing superior emulsifying and dispersing properties and enhanced stability. The phosphatides are readily sulfonated in the presence of solvents with such sulfonating agents as sulfur trioxide, sulfuric acid, chlorosulfonic acid, etc., yielding products that are more water-soluble and with improved emulsifying and wetting properties. Improved water-solubility is also attained by the interaction of phosphatides and epoxides. Stable hydrates are prepared by treating phosphatides in dilute alcohol, maintaining a pH of 4-6 by use of phosphoric acid, sodium acetate or sodium lactate.

Many metallic complexes of the phosphatides have been prepared for therapeutic purposes.

A special lecithin mixture has proven to be very efficacious in the treatment of scalds, burns and cuts, the affected areas healing rapidly without sloughing.

Certain types of keratosis have responded with amazing rapidity to a special lecithin therapy, even in cases where budding, similar to that of yeast cells, has occurred. The same special lecithin composition has proven very beneficial in many cases of dandruff by using the mixture as a pomade for the hair. It appears that the hair shaft readily absorbs the mixture as treatment of the scalp was unnecessary.

"Canker sores" (aphthous stomatitis) which have a duration of from one to two weeks, have healed completely in three days when treated with lecithin.

Prompt relief from pain of ingrown toe-nails is obtained by rubbing a little lecithin under the nail. The emollient effect of the lecithin does no doubt play some part in relieving pain but the absorbed phosphatides probably are the major factor.

Regular and modified lecithins are available for use in shampoos. Superior cleansing and lathering properties are imparted to the shampoo. The lecithin also inhibits hydrolysis. The use of from one to five percent is recommended. Lecithinated shampoos impart a softer "feel" to the hair and greatly facilitate combing after shampooing. The use of regular commercial lecithin in shampoos does not appear to impart any visible luster to the hair, however, when used as a pomade in conjunction with anhydrous lanolin, a brilliant sheen is imparted. Lecithin products must be incorporated into shampoos prepared by saponification after saponification is complete. Regular lecithin of plastic consistency may be incorporated by heating the lecithin with a small volume of the shampoo while agitating and then blending this premix with the balance of the shampoo.

Modified grades of lecithin have been developed for use in cosmetics, providing ready-blending and increased stability of emulsions over a wider range of pH. An almost odorless special lecithin product of fluid consistency produces immediate stable water dispersions. It is finding increasing use in skin lotions, creams, liquid and cake make-up, hair and scalp preparations and soap products.

Typical formulas are as follows:

Shaving Cream

Coconut oil	6.00%
Stearic acid	32.00
Sulfonated castor oil	2.00
Glycerin	4.00
Boric acid	1.00
Potassium hydroxide	16.00
Sodium hydroxide	2.00
Lecithin	1.00
Water, distilled, q.s. ad	100.00

Baby Powder

Glyceryl monostearate	2.00%
Talc	67.00
Cetyl alcohol	2.00
Lecithin	1.00
Magnesium stearate	5.00
Kaolin	18.00
Boric acid	5.00

Mascara Cream

Lampblack	40.00%
Paraffin	6.00
Lecithin	1.00
Petrolatum, q.s. ad	100.00

Cold Cream

Spermaceti	10.00%
Beeswax	10.00
Oil almonds	32.00
Lanolin	16.00
Cholesterin	1.00
Lecithin	1.00
Borax	1.00
Water, distilled, q.s. ad	100.00

Tissue Cream

Spermaceti	10.00%
Beeswax	10.00
Cholesterin	2.00
Lanolin	32.00
Liquid petrolatum	32.00
Lecithin	1.00
Borax	2.00
Water, distilled, q.s. ad	100.00

Vanishing Cream

Spermaceti	1.00%
Stearic acid, triple pressed	13.00
Glyceryl monostearate	1.00
Almond or olive oil	1.00
Stearyl alcohol	0.90
Mineral oil	0.50
Glycerin	4.00
Water, distilled	72.00
Lecithin	1.00
Potassium hydroxide	0.40
Propyl p-hydroxybenzoate	0.20
Perfume, q.s.	

Regular commercial lecithins form milky dispersions in water. A type of lecithin is available, which, in contrast, produces immediate and clear water solutions in small proportions. This product is free-flowing, translucent, light-colored and practically odorless with a specific gravity of approximately 1.0. It was developed for use in liquid detergents, clear shampoos of the soap or soapless type, strong liquid soaps, hair preparations, skin lotions, body deodorants, etc. A newly-developed grade of lecithin has been developed which is very light-colored and should be well-received by the cosmetic industry.

Lecithin has been incorporated into vanishing creams, cold creams, tissue creams, etc., with success, the creams being stable after holding at room temperature for over a period of one year. A preservative, of course, such as one of the Parasepts, is indicated.

"Cocoa butter lecithin" has been used to a large extent in the cosmetic industry, the naturally occurring soybean oil removed by acetone extraction and the cocoa butter substituted. Modified lecithins of varying phosphatide concentration are available, formulated for specific purposes. Typical are formulations continuing sulfonated oils, propylene glycol, etc.

Lecithin per se has been found to be very effective in the healing of cold sores.

Used in lotions and hand cleansers in amounts ranging from one to five percent, lecithin provides superior emolliency, penetration and absorption.

In powdered soaps and detergents, the lecithins counteract the removal of lipid skin components and have a neutralizing effect on harsh alkalies.

When compounding creams, etc., using water-soluble lecithins, the lecithin is simply blended with the aqueous phase and the usual procedure of preparation followed. Regular commercial lecithin of plastic or soft consistency is incorporated by blending with the fatty phase, avoiding temperatures above 80°C.

In shaving creams, lecithin facilitates softening of the beard, increases lather volume, retards drying of the lather on the face and permits "smoother" shaves. Microscopic examination of razor blades after shaving with lecithinated shaving creams revealed far less "nicks" in the blade than with a non-lecithinated shaving cream.

The addition of one to two percent of lecithin to lipsticks insures uniform distribution of the dye and enhances the color. The tendency of lipsticks to crack is inhibited. A smooth, even-spreading over the lip surface is obtained.

The oil-free or granular phosphatides are best incorporated into cosmetics by adding them to the aqueous phase without agitation, as stirring generally results in the formation of a "clumpy" tacky mass requiring considerable time to effect solution. The same procedure applies to organic solvents, such as benzene, chloroform, ether, etc. Solubility or blending in mineral oil, waxes, and glycerol is readily effected by heat, avoiding prolonged temperatures above 80°C.

Lecithins should find use in facial masks and packs. Where glycerin is a constituent, the lecithin would be incorporated into this solvent. Oil-free phosphatides could be blended with the Fuller's earth by trituration. Its use in beauty clays is also indicated.

Applied to corns and calluses, lecithin relieves pain and has a softening effect. Treatment of calluses of many years duration with a lecithin mixture after removal of dead skin with Kollex (an abrasive) has brought wonderful relief.

Lecithin has shown beneficial results in quite a large number of skin ailments. Tests are now being conducted to ascertain the effects of lecithinated U.S.P. ointments on certain skin conditions. The results should be most interesting.

The use of lecithins in camphor ices should prove of interest. The lecithin could be incorporated by blending with the wax or liquid petrolatum.

Used in mascara creams, lecithin should enhance the color effect and facilitate application. Here again, the lecithin may be blended with the soft neutral soap.

The use of lecithin in epilating waxes would probably yield a finer distribution of the wax and reduce skin irritation.

Lecithinated dusting and antiseptic powders should also prove of interest. The lecithin could be incorporated by triturating with the talc, sifting, and incorporating this premix with the balance of the formula.

Lecithin would be an admirable adjunct to lip pomade bases due to its emollient action and finer distribution-imparting properties.

Lecithin is used in massage oils. The lecithin may be incorporated by blending with the oils, lanolin, cocoa butter, etc. Amounts up to 5% are suggested.

The use of lecithin in cuticle softeners, nail creams and nail bleaches should be of interest.

Lecithin has been used with some success in the treatment of psoriasis.

A possible use for the lecithins is in soothing ointments, particularly those with a local anesthetic such as benzocaine.

The action of wound-healing and epidermis stimulants would no doubt be considerably enhanced by the action of the phosphatides.

As stated above, many modified lecithins have been developed for specific uses and users are advised to ascertain that the lecithin product used will be best-suited for their specific purpose.

To those skilled in cosmetology many other possibilities other than the few listed above will come to mind.

Acknowledgment

The author gratefully acknowledges the kindness of Mr. Joseph Eichberg, President of the American Lecithin Company, Inc., for supplying the various grades of lecithin.

Abstracts from the scientific section of the Toilet Goods Association November 30, 1960

The Change In Ultra-Violet Absorption Spectra With pH— Its Use In The Analysis Of Toiletries

D. E. Dean, R. Suffis and A. Levy
Shulton, Inc.

Ultravolet absorption spectra of phenols and aromatic amines depend upon pH. Such compounds may be determined in the presence of each other by observing spectral changes at selected pH values. The choice of pH levels depends upon the pK_a of the absorbing materials.

To illustrate the technique the analysis of two toiletries products is described. Applications of the principle other than for analysis are also mentioned as possible areas of further research.

Some Analytical Applications Of X-Ray Fluorescence Spectrometry

G. Robert Clark, Director
Food and Drug Administration

X-rays can be generated by various means. Those of interest in present day X-ray analyses by the so-called "fluorescence" technique are generated when atoms absorb energy from X-rays to displace electrons from K and L energy levels. When electrons from higher energy levels drop to the vacant position, X-rays of characteristic energy are emitted.

Measurements of the emitted X-rays can be used for both qualitative and quantitative analytical procedures.

In this paper the elements of the apparatus used are briefly described.

Determination of bromine and iodine in halogenated fluorescein dyestuffs is described in some detail. Bromine determination is an example of a straightforward determination of a principal component of a sample. The iodine determination involves use of second order spectra to perform an anaylsis not possible by use of first order spectra, because the first order lines from this element are at wavelengths not adequately resolved by the equipment available.

Determination of lead in trace quantities is also discussed as an example of the use of the technique for precise analyses in the determination of minor components.

The advantages of the X-ray procedures over conventional chemical methods are:

1. Preliminary separation of the element to be determined is not required.
2. Little or no sample preparation is needed.
3. The time required per analysis is short; in most cases a determination can be made in two to three minutes.

Odor-Intensity And The Stereochemical Theory Of Olfaction

James W. Johnston, Jr., Ph.D. and
Albert B. Parks, A.B., B.M.E.

While Dr. John E. Amoore, University of Edinburgh, has held that his theory of the stereochemical

All of these papers have been published in full in the Proceedings of the Scientific Section of the Toilet Goods Association, for November, 1960. Copies are free to members, and have been mailed to them. Copies are available to non-members at a price of $1.50 each, from the Toilet Goods Association, 1270 Avenue of the Americas, New York 20, New York.

This publication is issued twice each year, and is composed entirely of the proceedings of the two meetings of the Scientific Section. The annual subscription price is $2.50.

specificities of human olfactory receptors enables him to induce the odor-quality and intensity or strength of certain straight chemicals, it has been necessary to test these two attributes of odor separately. A homologous pair of articulate molecules, Methyl-carbomethoxypimelate and Methyl-4-carbomethoxy-4-pimelate, have been tested for their organoleptic qualities. The result showed that Amoore's prediction was good when one considers that it was inducted from first principles. It is important to appreciate that Amoore worked exclusively from the structural formulae and had not been told the odors of the pumelic esters. The present report is about tests to determine whether the parent compound is significantly more intense than its gamma methyl homologue. The result of rankings within pairs by seventeen good odor judges showed that they do not judge intensity-difference in the same way for certain compounds. It was shown that the parent compound is not necessarily the stronger one. However, a pilot experiment with the rare monocyclic terpines, lactone of 1-Methyl-4-butyl-4-hydroxycyclohexanecarboxylic acid and 4-Butyl-4-hydroxycyclohexanecarboxylic acid, showed that the parent compound is stronger than its gamma methyl homologue. While Amoore's theory needs to be revised for the prediction of the odor-intensities of articulate molecules, it may be found that chemicals like the above terpines, with a fixed molecular geometry, have a relation between the molecular structure and organoleptic intensity.

Studies On The Darkening Action Of Dihydroxyacetone

Peter Flesch, M.D., Ph.D. and
Elizabeth C. Jackson Esoda, M.D.
University of Pennsylvania

Browning of the skin surface from dihydroxyacetone (DHA) is accompanied by a combination of the free amino groups of the horny layer with the carbonyl groups of DHA.

Evidence for this reaction was obtained in several ways:

a.) by a gradual decrease of free amino groups in human horny layers during incubation with DHA;

b.) by preventing *in vitro* browning after pretreatment of the scales with formalin;

c.) by a greater decrease in the reducing groups in DHA solutions incubating scales which were deaminated, as compared with DHA solutions in contact with water-washed scales;

d.) by preventing browning *in vivo* and on excised skin under conditions of high humidity.

The reaction is only one of many steps in the browning process. The other steps and many other aspects of the action of DHA require further study.

Studies In The Adsorption Of A Simple Dyestuff By Hair

Martin M. Rieger and Stanley Brechner
Warner-Lambert Research Institute

The interaction of an acid dye with human hair is discussed, with emphasis on the similarity of dyeing wool and hair. Some of the physico-chemical theories developed for wool dyeing are applied to the dyeing of human hair. To establish this similarity, studies of the effect on dyeing of pH, temperature, and concentration are reported. Dyeing results using ground, bleached or otherwise modified hair are also considered.

Application Of The H.L.B. System To The Solubilization Of Essential Oils

S. J. Strianse and Monroe Lanzet
Yardley International Research Laboratories

This investigation is a systematic study of the solubilization of three essential oils using the HLB system as a guide to the selection of solubilizing agents. Oil of lavender, oil of lime, and methyl salicylate were solubilized and the required HLB's were determined for solubilizing the lavender oil and the lime oil. Methyl salicylate presented certain anomalies which were studied and theoretical explanations postulated.

It was found that mixtures of solubilizing agents produced better solubilizations than a single component and that mixtures of an anionic, sulfated ethoxylated alkyl phenol with a nonionic, ethoxylated alkyl phenol produced solubilizations at emulsifier to oil ratios of as low as one.

The HLB for solubilizing was found to extend from below 13.0 to approximately 17.0. The solubilization of any one oil was shown to occur over a relatively narrow range of HLB. It was demonstrated that somewhat higher percentages of oil could be solubilized over a broader range of HLB providing the ratio of emulsifiers to oil was held constant.

Some theoretical implications relating to solubilization are discussed and their relationship to method of manufacture and ultimate solubilization, clarity, and stability are emphasized.

There was found to be associated with all solubiliz ing sequences a phenomenon which the authors call HLB shift. This is fully described and an explanation has been proposed.

The possibility that some emulsifiers studied might form complexes with the essential oils was considered and some data which might tend to substantiate this is presented.

Some New Pathways In The Formulation Of Cosmetics For The Negro

Franklin H. Cooper and Edward Sagar
Lena Horne Beauty Products, Inc.

The formulation of cosmetics designed primarily for the Negro user must be based not only on an understanding of the physiological differences between the Negro and white populations, but also on an understanding of the wide range of physiological types within the Negro group. Shades of complexion, structure of hair, and other factors are taken into account, and it is shown that shampoos, hair conditions, makeup, and numerous other cosmetics must be tailor-made not only to suit the Negro group, but to accommodate the varied peoples found therein. In addition, an entirely new approach to sunscreen products, a tan inhibitor, has been developed by the authors, and its formulation and use are described.

Abstracts from the scientific meeting of The Society of Cosmetic Chemists November 29, 1960

Cosmetic Advertising Under The Federal Trade Commission Act

Charles A. Sweeny
Federal Trade Commission

This paper outlines, briefly, the provisions of the Federal Trade Commission Act under which the Commission is given broad authority to correct false and misleading advertising. The Commission has developed common sense rules of thumb for the purpose of screening advertising copy which rules have received direct support from the courts over a period of years. These rules are given as an aid to those responsible for advertising and advertising claims.

A series of typical cases wherein the Commission has issued complaints against cosmetic manufacturers is given to indicate the types of situations in which the Commission acts. Also, where advertising claims are supported by scientific test reports, the Commission uses a set of universal criteria to evaluate the laboratory data. These are given and explained. In addition, the importance to the cosmetic chemist of having his research data correctly interpreted is stressed.

All of these papers will be published in the Journal of the Society of Cosmetic Chemists. Subscription to the Journal is $6.00 to members, and is included in the dues to the Society. The subscription price to non-members is $18.00 per year in North America, and $18.90 to other areas of the world.

The Journal is published nine times each year, during January, February, April, May, June, August, October, November, December. Information relative to subscriptions or memberships is available from the office of the secretary, Mr. Robert A. Kramer, 250 East 43rd St., New York 19, N. Y.

Some Toxicologic And Clinical Studies With Dihydroxyacetone

Leon Goldman, M.D.
University of Cincinnati

The cosmetic chemist is interested primarily in the development of more effective coloring by dihydroxyacetone or its analogues. Until more is known of the mechanism of the formation of the dihydroxyacetone color complex, progress will be slow. Our experiences with Eva Wittgenstein and her associates, of the toxicologic studies following topical application and oral administration of dihydroxyacetone in animals and man will be reviewed. Brief note will be made also of the relationship of arginine and glycine to the development of the dihydroxyacetone color complex. Experiments of the physical characteristics of this color complex with various forms of microscopy and color reflectance technics will be presented. The effect of topical dihydroxyacetone in varying concentrations and vehicles in a variety of skin disorders will

be shown. Work with glyceraldehyde and glyoxal will also be mentioned. At present, dihydroxyacetone is only of limited use in clinical dermatology. However, it is a fascinating investigative tool not only in dermatology but also for other areas of Medicine.

Systemic Effects Of Topically Applied Cosmetics

Frederick Reiss, M.D.
New York University

A brief summary is given of topically applied cosmetics with special reference to sex hormones.

In relation to a survey made two years ago of the incidence of cosmetic dermatitis, as well as cross sensitization phenomena, it was revealed that sensitization was produced in the following order of frequency:

Nail Lacquer	36%
Permanent Wave Lotion	25.2%
Hair Dyes	23.8%
Lipstick	14.4%

A few physicians assumed that there might be a relationship between the application of cosmetics and blood dyscrasias. None however, offered an acceptable clinical or experimental proof on animals. Since experimental proof in humans is practically impossible, guinea pigs were chosen as the most appropriate experimental animal since it is well known that these animals are highly susceptible to sensitization.

An experiment was designed to test the systemic effect of topically applied commercial permanent wave thioglycolate lotion on one group of 50 guinea pigs and commercial paraphenylendiamine black hair dye on another group of 50 guinea pigs. Fifty guinea pigs served as a control. The animals were treated twice weekly for nearly five months, which corresponds to several years of applications in humans. Neither parenchymatous alterations nor blood or vascular changes of any kind could be observed in any of the 100 animals. Although no conclusions can be drawn in relation to humans from these observations, it is highly significant that the treated guinea pigs did not reveal any pathological changes.

The Current Status Of Acne Management

John Strauss, M.D.
Boston University

This paper discusses the pathogenesis of acne based upon histologic studies and correlated with other information on the natural history of the disease, in an effort to point out where new approaches to the therapy should be sought. Particular attention is paid to the correlation of these findings with the existing methods of treatment.

Moreover, great emphasis is placed upon recent findings concerning the effect of the various hormones upon the human sebaceous glands. The effects of androgens, estrogens, and progestins on the human sebaceous glands, and any interactions that may exist between these hormones are discussed. These findings are correlated with the clinical use of hormonal systems in the therapy of acne.

The hormones are discussed at some length because of their significance to the Cosmetic Industry.

Sonic Emulsification

Donald M. Skauen, Ph.D., and Harold M. Beal, Ph.D.
School of Pharmacy, University of Connecticut

Ultrasonic processing equipment is discussed with particular reference to dispersing and emulsifying types. In addition, data are given on the effect on emulsions of increasing batch sizes. Results of experiments comparing several conventional homogenizers with the Minisonic are described.

Scale-Up Problems With Impeller Types Of Fluid Mixers In Cosmetic Processing

J. Y. Oldshue, Ph.D.
Mixing Equipment Company, Inc.

Fluid mixers are common items of process equipment in the cosmetic industry. Many times it is desired to scale up data obtained on laboratory and bench scale equipment.

A brief review of mixing theory and practice will serve as a basis for the scale-up discussion. The characteristics of propellers, turbines, and paddles will be discussed as well as the role of baffles. The viscosity characteristics of the fluid affect scale-up considerations. The fluid mechanics involved in scale-up theory as well as practical methods of scale-up will be covered.

Laboratory experiments are sometimes conducted in tanks that are very dis-similar to commonly used large scale equipment. The value of data taken in unbaffled round bottom flasks, beakers or high speed disintegrators for scale-up work will be covered. One of the most important criteria is to define the mechanism of the process under consideration.

Application Of The Twin Shell Mixer In Liquid-Solid And Solid-Solid Cosmetic Formulations

John J. Fischer
Patterson-Kelley Company

Blending of solids and solids with liquids is a highly developed art throughout the cosmetic industry. In our laboratory work, we of Patterson-Kelley have made encouraging progress at reducing that art to a well-understood science. Better products and substantial production cost reductions have rewarded this work.

Experience with the basics of blending has spanned many industries—has not been concentrated in cosmetic manufacturing. Therefore, instead of attempting an expert's approach to cosmetic manufacturing problems, this presentation will deal with blending as an operation that now presents opportunities for improvement.

Physical problems of blending pigments, perfumes, extenders, talc and similar cosmetic ingredients are much like those encountered in other industries. Step-by-step development has led to sophisticated tumble blenders with attrition devices and liquid dispersion equipment. The twin-shell is one of these.

Cycles can be shortened and materials handling reduced by combining operations. Flow properties of particles can be improved. Difficult materials can be blended with precise uniformity by adjusting process variables.

The reaction of dihydroxyacetone with proteins

By John Buchter, Fred J. Bandelin and Nelson Kanas
Strong Cobb Arner Inc.

Dihydroxyacetone (1,3 dihydroxy-2-propanone) is a white crystalline powder with a sweet, cooling taste and a characteristic odor. It is a relatively small, polyfunctional molecule containing two methylene groups, two primary alcohol groups and a carbonyl group. These reactive groups take part in numerous reactions including condensations and polymerizations. In addition, dihydroxyacetone is a keto-triose and undergoes many of the reactions associated with simple sugars. It may be considered as a natural physiological compound since dihydroxyacetone-1-phosphate is an intermediate in the Krebs cycle in the utilization of carbohydrates. Oral administration causes an increase in lactic acid blood levels. (1) It forms glycogen in the body more readily than higher molecular weight sugars and this may occur either directly or through conversion to lactic acid or one of the other 3 carbon glycogen precursors.

Its singular and unique property of producing a brown stain when applied to the skin has been utilized cosmetically to produce a simulated or synthetic suntan. The brown stain, which requires several hours to develop after application is due to a chemical reaction with the skin. The mechanism of this reaction is not known. Early work by Emil Fischer (2) 1887-1889 on the isolation and reactions of dihydroxyacetone contains no mention of any skin-staining property. Nor does work by later investigators make any mention of this. The discovery of the staining property is quite recent, apparently first observed by several investigators independently about the same time.

Paper given at A. Ph.A Convention, Washington, August 1960.

The fact that this reaction occurs is not unusual in the light of current knowledge. The rapidity and intensity of the reaction and specificity for the skin and other proteins is unusual however.

The interaction between carbohydrates and amino acids and proteins has gradually become recognized as a widespread, naturally occurring biological phenomena. The dark-colored products formed by heating sugars with amino acids were extensively investigated by Maillard (3, 4) beginning in 1912 and this reaction has been named after him. Similar brown-colored compounds result from the interaction of sugars with proteins and this subject has also been extensively investigated and reviewed. (5) The Maillard reaction is better known to the food chemist who encounters it in darkening and browning of food products containing sugars which react with amino acids and proteins to give undesired discoloration. Although proteins contain relatively few free amino groups, there is considerable evidence that these groups react with reducing sugars or their decomposition products in an irreversible manner. These reactions are apparently quite complex, involving subsequent polymerization. The primary reaction appears to be a direct one between the sugar carbonyl and the protein amino group.

The formation of a tautomeric aldehyde group on one of the terminal carbon atoms of dihydroxyacetone and a Schiff-type reaction with the amino groups of amino acids and proteins is not beyond the realm of possibility. This would better help to account for the rate and intensity of the color formation.

The colors produced by these reactions are to be distinguished from the dark pigments formed in plants and animals by the action of oxidizing enzymes.

Since dihydroxyacetone is a sugar, we investigated its reaction with amino acids and proteins in an attempt to determine if this compound reacts in a manner similar to other simple sugars such as glucose which have been reported in the literature. (3, 5) To date no investigation of dihydroxyacetone with amino acids or proteins has appeared.

Experimental

Solutions of dihydroxyacetone 5% and 25% concentrations were placed in test tubes. 200 mgs. of various amino acids were added to 10 ml. of solution in each tube. Two identical series were prepared, one was allowed to stand at 37°C. for 24 hours and the other was heated in a water bath at 70°C. for 15 minutes. Results were observed. Results are given in Table I.

The various amino acids under investigation were placed individually into each of the depressions of a spot plate. 0.2 Ml. of 5% solution of dihydroxyacetone was added to 200 mgs. of each of the amino acids. A similar series using a 25% solution of dihydroxyacetone was prepared. These were allowed to stand in an incubator at 37°C. They were observed after 8 and 24 hours had elapsed. Results are given in Table II.

Various proteins were placed on a spot plate. To 200 mg. of the protein, 0.2 ml. of 5% solution of dihydroxyacetone was added. To a second series, 0.2 ml. of 25% dihydroxyacetone was added. They were incubated at 37°C. and observed after 8 and 24 hours. Results are given in Table III.

Using a sheet of glycerinated gelatin, various solutions of dihydroxyacetone were applied by saturating squares of filter paper with the solution and applying to the surface of the gelatin. After 10 minutes the paper was removed and the gelatin sheet placed in an incubator at 37°C. The brown spots occurring after a period of time on the gelatin sheet were observed after 12 hours and compared.

Discussion

Only glycine of the amino acids yielded color with 5% and 25% solutions of dihydroxyacetone on standing for 24 hours at 37°C. The color resulting with glycine in 5% solution of dihydroxyacetone was yellow-orange and the 25% solution was brown. Heating

TABLE I

Color Reactions of Amino Acids with 5 per cent and 25 per cent Aqueous Dihydroxyacetone Solution at Room Temperature and at 70°C.

	5 per cent solution		25 per cent solution	
	24 Hours 37°C.	15 Min. 70°C.	24 Hours 37°C.	15 Min. 70°C.
1. l-Tyrosine	N.C.	N.C.	N.C.	N.C.
2. l-Cysteine	N.C.	Faint Yellow	N.C.	Yellow
3. l-Leucine	N.C.	N.C.	N.C.	N.C.
4. l-Proline	N.C.	N.C.	N.C.	N.C.
5. Hydroxy-l-Proline	N.C.	N.C.	N.C.	N.C.
6. dl-Phenylalanine	N.C.	Faint Yellow	N.C.	Yellow
7. dl-Threonine	N.C.	Faint Yellow	N.C.	Yellow-Orange
8. dl-Serine	N.C.	N.C.	N.C.	Yellow-Orange
9. dl-Glycine	Yellow	Brown	Yellow	Dark Brown
10. dl-Methionine	N.C.	Yellow	N.C.	Yellow-Orange
11. l-Tryptophane	Yellow	Orange	N.C.	Orange
12. l-Asparagine	N.C.	N.C.	N.C.	Pale Yellow
13. l-Isoleucine	N.C.	N.C.	N.C.	N.C.
14. l-Valine	N.C.	N.C.	N.C.	N.C.
15. l-Glutamic Acid	N.C.	Yellow	N.C.	Yellow

TABLE II

Color Reactions of Amino Acids Moistened with 5 per cent and 25 per cent Solutions of Dihydroxyacetone at 37°C. for 24 hours

200 mg. Amino Acid	0.2 ml. 5 per cent DHA	0.2 ml. 25 per cent DHA
1. l-Tyrosine	N.C.	N.C.
2. l-Cysteine	N.C.	N.C.
3. l-Leucine	N.C.	Faint Tan
4. l-Proline	Dark Brown	Dark Reddish Brown
5. Hydroxy-l-Proline	N.C.	Faint Tan
6. dl-Phenylalanine	Light Tan	Light Brown
7. dl-Threonine	Orange-Brown	Brown
8. dl-Serine	Faint Yellow-Brown	Orange-Brown
9. dl-Glycine	Dark Brown	Very Dark Brown
10. dl-Methionine	N.C.	Light Tan
11. l-Tryptophane	Light Brown	Brown
12. l-Asparagine	Brown	Brown
13. l-Isoleucine	N.C.	N.C.
14. l-Valine	N.C.	N.C.
15. l-Glutamic Acid	N.C.	Yellow

TABLE III

Color Reaction of Various Proteins Moistened with 5 per cent and 25 per cent Solutions of Dihydroxyacetone at 37°C. for 24 Hours

200 mg. Protein	0.2 ml. 5 per cent DHA	0.2 ml. 25 per cent DHA
A. Egg Albumen	Yellow	Yellow-Brown
B. Pepsin	Brown	Dark Brown
C. Trypsin	Dark Brown	Dark Brown
D. Serum Globulin	Yellow-Brown	Dark Brown
E. Insulin	Orange	Reddish-Brown
F. Gliadin	Pale Yellow	Yellow
G. Protamine	Brown	Dark Brown
H. Polymyxin	Orange	Reddish-Brown
I. Peptone (beef)	Brown	Dark Brown
J. Gelatin	Brown	Brown
K. Casein	Yellow	Light Brown
L. Soy Bean Protein	Dark Brown	Dark Brown

in a water bath to 70°C. increased the number of amino acids giving color reactions.

Colors could be produced with much smaller amounts of these solutions (0.2 ml.) when used to moisten the amino acids producing, when dry, intense colors in most cases.

The tanning effect of the dihydroxyacetone on the glycerogelatin sheet simulated the effect on skin. It was possible by this technique to determine differences in concentrations and the effect of surfactants, pH and the addition of salts and other compounds on the rate and degree of brown coloration produced. Aqueous solutions produced a better and more rapid reaction on the gelatin sheet than did hydroalcoholic solutions. The addition of ethanol and isopropanol retarded the reaction considerably; the addition of glycerine inhibited it slightly. This is the converse of the response obtained on the skin with these solvents. On the skin, ethanol and isopropanol gave a more intense coloration than aqueous solutions. The addition of surfactants to dihydroxyacetone applied to the gelatin sheet also seems to inhibit the reaction whereas, on the skin, these compounds seemed to aid the development of color.

Summary

Dihydroxyacetone reacts with a number of amino acids investigated to give yellow to brown colors when heated in a boiling water bath. This Maillard type of reaction occurred only with glycine when allowed to stand with dihydroxyacetone solutions at 37°C. Heating the solutions increased the number of amino acids giving color reactions.

The color reaction occurred with a greater number of amino acids with more intense coloration when the acids were moistened with the dihydroxyacetone solutions of the same concentration on a spot plate at 37°C. The reaction apparently proceeds better in the absence of an excess of water and appears to be a surface phenomena which is facilitated by adsorption. All of the various proteins investigated, produced color when moistened with dihydroxyacetone solution. The reaction was more marked when carried out with a minimum of water. Only enough water is necessary to disperse the dihydroxyacetone on the surface of the protein. The greater amount of color produced by the proteins as compared with the amino acids indicates that more extensive reaction or polymerization is involved. It is postulated that the reaction occurs between the amino groups of the proteins and the carbonyl of the dihydroxyacetone followed by polymerization resulting in the brown coloration. Solubility in water rather than molecular size seems to contribute to the rate and extent of the reaction since peptone and insulin give greater color in a much shorter time than gliadin and casein.

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WRITE FOR SAMPLES AND FULL INFORMATION

Some applications of pyrogenic silica in cosmetic chemistry

By H. P. Donohue, Jr.
Godfrey L. Cabot, Inc.

Pyrogenic silica will be of interest to the cosmetic chemist because it provides him with a new tool for formulation of new products, as well as for reformulation and simplification of existing products. Like most tools, pyrogenic silica will be used most efficiently when its characteristics and limitations are completely understood.

Basically, silica is not new to the cosmetic chemist. Silica gels have been known commercially as far back as 1861 and commercial silica gel has been produced in this country as early as 1920. Silica occurs as sand, quartz, tridymite, diatomite, silica gel, precipitated silica, silica aerogel, pyrogenic silica and probably others. Some of these are crystalline; others are amorphous; some occur naturally, and others are prepared synthetically. Those of interest to the cosmetic chemist, however, have three characteristics in common which set them apart from the rest:

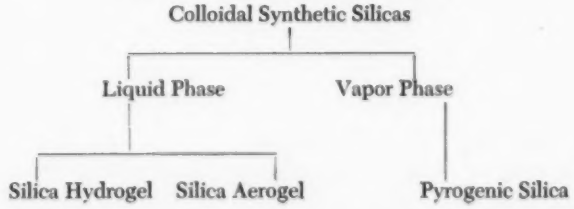
1) They are finely divided;
2) They are amorphous in nature;
3) They are synthetically prepared.

The oldest of this class of silica is the silica hydrogel. The next oldest is the silica aerogel, and the newest of the synthetically-prepared silicas is pyrogenic silica. There are many significant differences, both in properties and behavior, between these three types but basically all of them can be explained by the method of manufacture.

Figure 1 shows the type of process used in preparing the three silicas. Commercially, there are two processes; that is, the liquid phase process in which the silica particles are generated in an aqueous environment and the vapor phase process in which the silica particles are generated in a gaseous environment. As you can see from the figure, both the hydrogel and aerogel types are liquid phase reactions, while the pyrogenic type is a vapor phase reaction. The liquid phase process is a double decomposition reaction involving the reaction of a mineral acid, usually sulphuric acid, with sodium silicate.

FIGURE 1

Classification of Colloidal Synthetic Silicas By Method of Preparation and Type



Presented before the New York Chapter, Society of Cosmetic Chemists, March 9, 1960.

FIGURE 2

Basic Chemical Reactions for The Manufacture of Colloidal Synthetic Silicas

1. *Liquid Phase Process*
   $Na_2O \cdot xSiO_2 + H_2SO_4 \text{ - - - } Na_2SO_4 + H_2O + xSiO_2$
2. *Vapor Phase Process*
   A. $2H_2 + O_2 \text{ - - - - } 2H_2O$
   B. $SiCl_4 + 2H_2O \text{ - - - } SiO_2 + 4HCl$

Figure 2 summarizes the chemistry of the two reactions. The silica hydrogel and silica aerogel, being made essentially from the same reactants, will have similarities to each other that neither will bear to the pyrogenic silica.

The reaction of the sodium silicate and sulphuric acid produces a firm gel, which is broken up and washed with water to remove the soluble salts such as sodium sulphate. The gel is then dried, during which operation it shrinks to a granular, porous structure. This is then reduced to small particle size by milling. Since there is still chemically bound water associated with this gel, it bears the name hydrogel.

The aerogel process is similar to the point of drying, at which stage the water in the structure is replaced with alcohol. This composition is known as an alcogel. The alcohol is subsequently flashed off at high temperature and pressure, leaving the silica aerogel. Its name is derived from the fact that the water has been replaced by air.

The vapor phase flame hydrolysis reaction which produces pyrogenic silica can also be used to produce other colloidal pigments such as Al_2O_3, Zr_2O_3, Fe_2O_3 and TiO_2. The method of manufacturing pyrogenic silica is discussed in much greater detail in "Industrial and Engineering Chemistry," Volume 51, Page 232, March, 1959.

Briefly, however, the process is a simple reaction of silicon tetrachloride with water at an elevated temperature of 2,000°F, which is provided by a hydrogen flame. The principle of hydrolysis is proved by the presence of HCl as a by-product. In the formation stage, pyrogenic silica is literally as fine as cigarette smoke; that is, it occurs as a classic aerosol of a solid in a gas phase.

In order to collect the material, a rather complex series of pipe bends are employed, both to cool the gas stream by radiation and to allow the particles to hit one another and form agglomerates sufficient in size to obey Stokes' law of sedimentation. The agglomerated material is then collected in a series of cyclone separators and conveyed to a calciner in which a counter-current stream of super-heated steam is used to strip the excess adsorbed HCl from the silica surface. The waste HCl, which has been removed from the silica during the collection process, is then conveyed to an acid recovery unit which concentrates the material to a 35% concentration. The waste HCl is then sold via a pipeline to one of our adjoining neighbors. The material is then conveyed to densifying tanks and packed by a vacuum process.

Essentially, then, this process involves rather simple chemistry.

The independent variables of the process are controlled with reasonable ease. The most complicated of these is particle size, which is reflected in the surface area specification. Surface area is a more critical measurement of average particle size, provided the particle has no internal porosity. Surface area can be controlled by variation of grain loading; that is, the rate of introduction of silicon tetrachloride into the flame zone of the furnace. It can also be varied to a certain extent by the flame temperature. Generally speaking, a combination of these two variables is used to meet particle size requirements.

The pH, which is normally measured electrometrically in a 4% dispersion, is controlled in the aftertreatment operation. Flexibility, of course, is required in aftertreatment because the higher surface area grades have a lower pH and hence require more aftertreatment than the standard materials.

In some cases where acidity is a critical variable, we have introduced a second measurement of pH known as acid number. This test was originally devised for the silicone rubber industry and has proved to be an excellent indication, not only of primary ionization of HCl but, in some cases, of secondary ionization of silicic acid.

The hydroxyl surface area, or the number of hydroxyl groups per particle, can also be indicated somewhat by acid number and pH. There has been no good method of specifically measuring hydroxyl surface area to date. The classic method of methyl red absorption leaves something to be desired. We do know, however, that the hydroxyl surface can be modified, both by reaction temperature in the flame zone, and temperature and residence time in the calciner.

The final variable of interest is bulk density, which can be varied by mechanical means from a low density of 3.5 pounds per cubic foot to a high density of 7 to 8 pounds per cubic foot.

Having defined the manufacturing process of pyrogenic silica, it seems reasonable to look to the specific properties of this silica which will account for some of its functions.

Basically, we are talking about a spherical particle which has an average particle diameter of 15 millimicrons. The particle size may go as low as 10 millimicrons on special high surface grades which have been developed for other applications.

The refractive index of pyrogenic silica is 1.46, which you will immediately recognize as being very close to that of most organic solvents and vehicles.

The oil absorption of 150 pounds of oil per 100 pounds of pigment will, in some cases, partially account for some of the interesting rheological properties.

The color, of course, is white.

The material is slightly acid with a pH of approximately 4.

Physically, the material is loosely agglomerated and is easily fluidized for purposes of air conveying.

Of course, being an almost pure silica, the material is, for all practical purposes, chemically inert.

The pyrogenic silica is mildly hygroscopic as would be expected from any high surface area material which is basically hydrophilic in nature.

The last interesting characteristic is its possession of a negative charge, which is independent of pH.

In many of the applications of pyrogenic silica, we will be taking advantage of two or three of the properties.

Before exploring the application of pyrogenic silica in cosmetic chemistry, we should now look to its functions.

The first and most important function would be its basic thickening action. This will be dependent upon three things: One, of course, the concentration; secondly, the polarity of the vehicle or the solvent system in which it is dispersed, and, thirdly, the degree of dispersion.

This last variable, dispersion, must always be considered in all applications because, in a sense, it can be an extra degree of flexibility in formulating with pyrogenic silica.

The second function which is important is the thixotropic structure. I use the word "thixotropic" advisedly. Many rheologists will argue that the performance of pyrogenic silica in most organic vehicles is really pseudoplasticity. At any rate, the thixotropy, which rarely can be separated from thickening, is dependent upon the same variables discussed before; that is, polarity, concentration and dispersion.

The suspension properties are a combination of the gel structure, developed during the dispersion phase, and always of the particle charge or attraction forces which are inherent in the basic particle.

At this point, I should differentiate between performance in aqueous systems and organic systems. While the functions at this point are similar, the mechanics of behavior are somewhat different. The function of pyrogenic silica in a system such as mineral oil is best defined as pseudoplasticity; in a water system it is more precisely defined as thixotropy. There is a much larger time differential to restore the gel structure in a water system after it has been exposed to shear than in an organic vehicle system.

Generally, the three functions of thickening, thixotropy and suspension should be considered together.

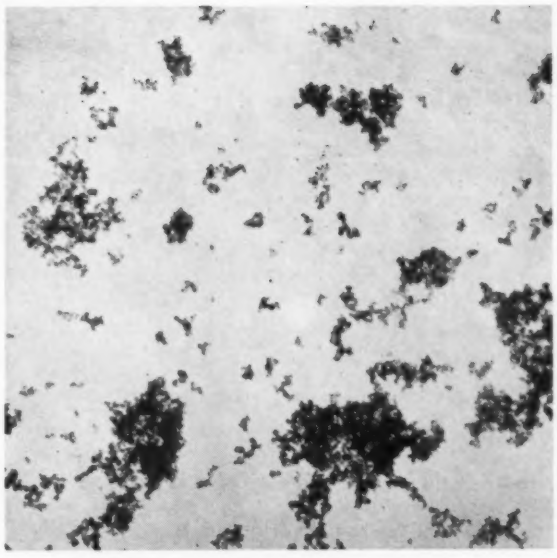
The next important function of pyrogenic silica is its ability to function as a free-flowing agent. Generally, this function is conceded to be a result of both particle charge and particle geometry. I like to consider this action as the effect of small spherical particles acting as ball bearings.

Because of the inert nature of pyrogenic silica, it becomes an ideal substrate for other active agents. The fine particle size, combined with the chemical inertness, allows it to also function as a literal physical buffer between active agents.

Paradoxically, while the material functions well as a free-flowing agent for powdered materials, under mechanical force it can act as a binding agent for tabletting operations. I will discuss this in a little more detail under applications.

Its last important function is the characteristic of varying or spreading the melt point in polymer systems. Materials which have a sharp melting point may have the melting point broadened or, in some cases, it is actually elevated.

Now that we have determined the limitations and flexibility of our new tool, let's examine some of the possible applications in the field of cosmetic chemistry. Initially, the first fact to consider is the list of



Pyrogenic silica, magnified 50,000 times.

uses approved by the F. D. A. In most cases, we feel that the approved limitations of application are quite generous in terms of amounts required to function efficiently.

Let's take for example an ointment base, which might be prepared by thickening mineral oil with approximately 6% pyrogenic silica. Such a material will not only be thickened efficiently but will be transparent for all practical purposes. Pyrogenic silica will also function in this system as a thixotropic agent which means that, when packaged in tubes or other types of squeeze packaging devices, it will flow easily under shear and cut-off sharply when the shearing force is removed. In addition, it can now also act as a carrying agent for other active or medicinal ingredients which will be incorporated into the ointment base.

In cases where the amount of solids is to be varied, we can increase or decrease the thickening efficiency by the addition of either polar or non-polar additives to change the basic vehicle structure. For instance, the addition of 2-3% nonyl butyl alcohol to a 6% mineral oil dispersion would allow the level of silica to be raised to 10 or 11% for the same viscosity.

In powdered systems, such as face powder, baby powder, etc., pyrogenic silica will function very efficiently as a free-flowing agent, quite independent of the atmospheric humidity conditions. Many common free-flowing agents work on the basis of preferential adsorption of water, whereas the function of pyrogenic silica seems to be one of preventing sticky particles from coming together. Again, pyrogenic silica can be used as a partial substrate for the introduction of medicines or other active agents.

In the field of dispersions where settling is an extreme problem, the silica will function both as an anti-settling agent and as a flow control agent but will not affect the clarity of the basic system.

Solid vehicle systems, such as suppositories, can be improved from a mechanical standpoint by the adjustment of the melting point properties. In some

cases, it is interesting to conjecture about the possibility of using a lower melting point vehicle and raising the melt point by the addition of silica. This addition will also introduce the variable of thixotropy which can possibly allow extrusion rather than casting of the finished product.

In tabletting, the silica really seems to have a multifunctional role. It can initially function as a free-flowing agent for the material prior to granulation. During the granulation phase it will assist in the formation of granules and by its presence in the granules, it will form a basis for a binding structure. However, because of its anti-blocking effect, it will also function as a mold release agent and, in final use, it will, of course, act as a dispersing agent because of the hydrophilic nature of the silica. During the tabletting phase, it will prevent strike-through of the coating syrup and, by introduction of thixotropy, it will allow a faster build up of the final coating so that some of the coating steps may be eliminated.

In addition, in some pigmentation operations it may literally act as a transparent extender for the pigment if it is included during the grinding phase. This is probably actually a function of prevent of re-agglomeration. In powders which are distributed to be later dispersed into water or some other solvent, it will function usually as a free-flowing agent. Secondly, during the wetting phase it will act as a wetting agent by allowing the solvent to freely associate with the material to be dispersed and, finally, as an anti-settling agent in the finished product.

Pyrogenic silica is, of course, an excellent reinforcing agent for all organic and polysiloxane elastomers and it also functions extremely well as a flatting agent, as well as a cryogenic insulator.

In all of the functions and applications discussed, we at all times have the action of a chemically inert material which will not enter into side reactions with other reactive chemicals. While none of the functions discussed are new in nature, the use of a non-reactive material to provide them may greatly increase formulation flexibility.

In summary, therefore, the pyrogenic silica can be a useful tool for the cosmetic chemist in formulating his end products because it provides the following benefits:

He can reduce the variables to study whenever the silica is considered as an ingredient in place of an organic agent.

He can reduce the inventory of raw materials because of the polyfunctional action of the silica.

He can reduce the cost in many systems because the silica performs several functions.

He can add product appeal because pyrogenic silica does not affect the color or general appearance.

He can add product flexibility, both in manufacturing and packaging, because of additional flexibility in handling the active ingredients.

While pyrogenic silica has already proved a valuable tool for the experienced cosmetic chemist, its versatility indicates that many more applications will be discovered. The time spent learning to use it effectively will be justly rewarded in increased efficiency and flexibility of formulation.

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With the SCC tour - by Maison G. deNavarre

This report will be continued in our next issue

On August 31st, the S. C. C. tour group arrived in Munich after traveling through the picturesque Austrian and German countryside from Innsbruck. Awaiting them were the Herb Heinrichs (Coty), Ellis Reyner (Old Empire), Ray Stetzer (Revlon) and his son, Irene White (Breck), Rosemarie Wallish-Schaeben (Toni) and Gert Keller (Schimmel). It was a cool, overcast and drizzly day. By the time the rooms were assigned, it was nearing noon. My I.F.S.C.C. business took me to the Regina-Palast Hotel to prepare for the annual meeting of the International Federation of S.C.C.s of which I had been president for the year just finishing. The Regina-Palast is down the Promenadeplatz from the Bayerischer Hof, around the corner on the Maximilian's Platz. At the juncture of the two streets one sees the white marble Wittelsboch Fountain, symbolizing the productive and destructive powers of water. Our Council meeting was scheduled for 2:00 p.m., with a press conference at 4:00 p.m. So lunch was a little hasty. At 1:30 p.m. Erica Millman, the I.F.S.C.C. general secretary and I were on deck to prepare for the meeting at which a number of significant recommendations by the Comité de Direction were to be made.

The delegates began to arrive. One of the first was Gui Dony (UBEFACO) and his adviser, Albert Schelvis, followed by Ludwig Masch (Beiersdorf), Herbert Neugebauer (Kaloderma), Robert Marriott (County Laboratories), Jack Wilkinson (Lever), Hector Hibbott (Goya), Jerry Amsterdam (van Ameringen), Sophie Plechner (Carter Products), Pierre Velon, Connie Steffenson, Eric Thomsen and Kurt Pfeiffer (Tokalon). Dr. Paolo Rovesti arrived after the meeting had convened.

The new constitution of the I.F.S.C.C. which had already been approved by the individual Societies was adopted by the Council. Reports by the various officers (including the treasurer) were given. A new slate of officers proposed by the Comité were unanimously elected.

Dr. Robert Marriott (Great Britain) president; Mr. Gui Dony (Belgium) treasurer; Comité de Direction: Dr. Pierre Velon (France), Dr. Jorge Artigas (Spain), Dr. Ludwig Masch (Germany) and I as ex-officio member. Two new members, the Societies of Cosmetic Chemists of Italy and Japan were accepted by the Council.

Our meeting ended promptly at 4:00 p.m. Drs. Marriott, Wilmsmann, Masch, Neugebauer and I moved to another room to "face the press." Among our interviewers were such people as the trade press editors (Littlejohn, Hentzel, Kunzmann), radio, television, women's magazines and newspaper editors. The hour and a half passed quickly with scads of interesting questions, and I hope, many useful answers.

The official reception of the German S.C.C. started at 5:30 p.m. To mention the names of all the people there would be like reading the congress registry. Some names I shall give because it isn't often I see these people. Our Danish friends the Steffensens,

A table of delegates from France.

Dr. Pierre Velon directing a Bavarian Band.

Thomsens and Petreschs were there, the latter with their lovely young daughter, Anne Dorte. The French were represented by Dr. S. Sabetay, Marie Louise Du Cluzel, Gisele Marsac, (the latter ladies I hadn't seen for three years) Bernard Guillot and Pierre Velon (and wife). Nearby, dear old Dr. Ludwig Salfeld was being watched over by Jack Mausner. The Italian group were quite "comfy" around the French visitors. Dr. Facchini and wife, Dr. Marcello Lang and Dr. Aldo Barroni all of Milan, kept a watchful eye on Dr. Paolo Rovesti. Three people from many thousand miles away represented the new I.F.S.C.C. members of Japan. They were Messrs. T. Hidan and T. Koyama and Miss F. Koga (Shiseido). Joe and Mrs. Jordan (Helene Curtis) of Holland were pleasant to see again. Joe has the face and complexion of a boy sixteen years old . . . with much less hair, even as I. Rochus Classen (Givaudan) and young wife whom I hadn't seen for three years were as attractive today as the day they married. Dr. Alfred Huthig (who doesn't look the sixty years he recently celebrated), wife and handsome young son came for the reception only. My two girls spotted the boy and after introductions I left them to carry on. Herbert Neugebauer's daughter took her mother's place (who was recuperating) and did well indeed. One could see the happy look in the proud father's eye as she moved around meeting people. Hans Keller (Grunau) whom I saw last in the Russian Building at the World's Fair in Brussels, was there. Drs. Otto Jacobi

M. deNavarre tapping the beer-keg, assisted by Dr. L. Masch and Dr. B. Storp. Note rubber apron and umbrella.

(Kolmar) and Herb Heinrich were busy comparing notes on what had taken place since both had left Milwaukee.

About seven o'clock, Ludwig Masch, Alfred Herzka and I had dinner together for the purpose of discussing the first issue of the S.C.C. Journal to be published in Germany. At 9:00 p.m. the German S.C.C. had a general meeting of its members at the Regina-Palast Hotel.

Josephine Catapano (I.F.F.) and Wilma Porrer (Sears) joined us, having arrived late from Oberammergau where they saw *the* Passion Play. They said it was overwhelming—there were moving moments—but it was a complicated and perhaps confusing decennial offering, they thought.

A good night's sleep, a Continental breakfast and off to the Technische Hochschule where in the large, air conditioned chemistry amphitheater we were to spend two long days.

At 8:00 a.m. the streets of Munich are little different than New York or Chicago. Perhaps a few more bicycles are in evidence than in the U.S.A. The city was very heavily damaged during the war. The exact bombed areas are easy to discern, for the new buildings are utilitarian, standing out among the

Dr. A. Barbier, Mr. W. Littlejohn, Robert Eckton and Gert Keller.

Dr. Herbert Neugebauer, president of the German SCC, opening the IFSCC Congress.

charming old rococo and baroque that has been Munich for centuries. It was in this city that Hitler started his *putsch*.

The Germans (and all other Europeans) start their meetings early . . . and with ceremony. First the Munchner Chorburen (Children's Choir) under the direction of Fritz Rothschuh, sang several selections. Then the official opening of the Congress by Professor Dr. H. C. Max Kneissel, Chancellor of the Technische Hochschule. Following the Chancellor, I gave my welcoming address as president of the I.F.S.C.C. in German, French and English (I was prepared to give it in Spanish but to my knowledge the Mexican and Spanish visitors did not arrive, so no Spanish welcome).

President of the German S.C.C., Dr. Herbert Neugebauer gave their welcoming address to the visitors, pointing out that fifteen countries were represented at this first Congress sponsored by the I.F.S.C.C.

Official welcoming speeches followed from the High Mayor, State Secretary and other government officials finishing with Hans Kunkel, vice president of the Chamber of Commerce for Upper Bavaria.

Each speaker took a few minutes longer than had been planned, hence the program was almost an hour behind schedule.

A "festive" speech by Professor Dr. J. Vonkennel

IFSCC retiring president M. deNavarre addressing press conference. Others are Dr. R. Marriott, Dr. H. Neugebauer and Dr. L. Masch.

had as its subject and target, cosmetics and chemistry. The Professor has quite a sense of humor.

Here I should point out that a staff of four translators worked in 15-minute sessions, translating German into English, and vice versa, as well as French into German and English, all coming over our desk radio sets, as at the U. N. (Would the Yankees do as much for the Europeans if the 1964 I.F.S.C.C. sponsored Congress takes place in the U. S. A.?)

The intermission was by-passed and the first technical paper was given. It really was a well-prepared presentation. Dr. E. Paukner (Dr. O. Martens and Co.) discussed the psychology of odor and successful perfuming. A special set-up introduced the fragrance discussed into the amphitheater, then quickly exhausted the air for the next fragrance. Very impressive, especially with descriptive colored slides tabulating male and female choices.

The program is too long to list completely. We have already published the abstracts of the many papers in the September issue of the AMERICAN PERFUMER.

Inevitably lunch came. Since we were late, it was a "quickie" in the nearby Balde-Haus (Bratwurst, sauerkraut, potatoes and beer for me).

I was honored to be allowed to do the introductions and lead the discussions of the afternoon papers.

During the afternoon, Ludwig Masch, Bob Marriott

Representing the SCC of Japan are Mr. T. Koyama and Miss F. Koga.

and I also recorded an interview for Radio Munich.

After the technical papers were given, we all hurried back to our hotels to be prepared for the formal banquet at the Bayerischer Hof at 8:00 p.m.

The ladies had toured the city during the afternoon seeing such places as Botanical Gardens, Alter Peter Church, Marienplatz, National Opera House, the University, City Hall and then some shopping.

The banquet room at the Bayerischer Hof is typically *old* Munich. Tables of twelve were neatly arranged on the main floor and in a mezzanine. Attendance was restricted to registered members of the I.F.S.C.C. member Societies.

After aperitifs we sat down to the following delicacies:

Kalt Salmschmitte (mayonnaise, toast and butter)
Klare Schildkrotensuppe
Mastkalbssteak "Princesse"
Karotten–Erbsen
Pommes Colbert
Birne "Helene" Patisserie
Mokka

We enjoyed two lovely wines, a Riesling (1959er Brauneberger Hasenlaufer) and a Thorin Beaujolais Grande Reserve (1957).

Among those at our table were the Hibbotts, the mother of Dr. Bruno Storp and Kurt Schwarzkopf. Mother Storp was justly proud of the way her handsome son handled the program. After a few introductory remarks by him, then by me, Dr. Storp introduced the Bavarian Saurer trio, father, son and his wife. The son played a zither, the wife yodeled and the old gentleman was a harpist. Almost a half hour of this entertainment was followed by MacGregor, the quick change artist, a man of a hundred characters.

Dancing to the music of Walter Schacht's orchestra until 2:00 a.m. completed the evening's festivities. The music had a slightly different beat even though they played Yankee hit tunes every now and then. It was a ball in every sense.

On Friday, September 2nd, we had a holiday from the academic atmosphere and hard seats of the Hochschule. Along with the members and guests of the German S.C.C., some half dozen bus loads of us went touring. First to the Bavarian Alps and the Chiemsee; it is the largest lake in Bavaria, one of the finest vacationlands in all Germany. Some maps show it as the Bayerische Meer.

At Prien Stock a ferry boat took us to the island Herrenchiemsee. A pre-planned lunch was served at the Schlosshotel. Trays of steins of beer satisfied the thirst of the many able to still comfortably enjoy it. Personally, I would have preferred beer at this point but settled for a 1959 Rhine vintage. The liver dumpling soup was so good I had seconds. A most toothsome pork dish followed with the usual trimmings.

It was here that Drs. Masch, Marriott, Schonhagen, Sicman and I discussed the work of CIRSCO, a Dutch non-profit group doing cosmetic research. We walked as we talked and found ourselves at the castle built by Ludwig II, patterned after Versailles but somewhat more compact. It is this comparative smallness that makes the mirrored rooms, the heavy use of gold leaf and murals a bit outré, to my way of thinking. The emperor lived in this extravagance for twenty-three days before he was done in, it is believed.

After walking in this luxury for well over an hour, one's feet began to tell their age. It was still quite a hike through the gardens back to the boat pier. We were embarking on a boat trip around the Insel Frauenchiemsee which takes about an hour. On this island one finds one of the oldest German convents founded by the Benedictines in 783 A.D. The great grand-daughter of Charlemagne, the beatified Irmingard is entombed within its walls.

Back at Prien Stock, which is on the western bank of the Chiemsee, we again boarded buses for our next stop, the Bayerisches Brauhaus at Tegernsee, a typical Bavarian beer and dining hall.

Little did anyone realize the entertainment of the evening was to be supplied not by the professionals but by us, the customers.

First, I was called on for the solemn opening of a large keg of beer. My helpers and advisers were Drs. Storp and Masch. The picture shows Dr. Storp with a raincoat, Dr. Masch with an unbrella and I was defrocked and put on a full length rubber apron. A few solemn notes from the orchestra and I was to bang in the spigot. Bang! Bang! Nothing happened. The orchestra leader pointed out I was banging the wrong bung. So, to the right bung went the bronze spigot. A few more notes of music and bang. In went the spigot–about 90 per cent. The spray of beer in a 360° arc was like a spray from a punctured aerosol can. Now I knew why the rain gear.

A liter of beer each and down the hatch. Oh, what a young boy am I, a 200 cc. drinker working on a liter.

That started the festivities.

At our tables everyone had a shot of *enzian* schnapps, which is distilled from fermented gentian root. (It reminded me of Mexican mezcal.) And more liters of beer with hot potato salad and cold smoked pork loin with plenty of chewy bread. And beer. We sang–drinking songs among others. The schnapps and the beer and the band and the people–everyone was truly gay.

Then to the stage came the parade of S.C.C. presidents, each assigned a special chore in turn. You should have seen Bob Marriott on the base drum! Like he had years of experience! Then Pierre Velon directed the orchestra and no one was more serious than he. The new German S.C.C. president, Dr. Wolfgang Eckardt did a Romeo balcony scene and was rewarded by a generous hug and kiss by a secret Juliet. At this point I kind of lost my sequence of who did what. In a group of several presidents racing to see who could drink a liter of beer most quickly on one breath, amiable Tsunemasa Koyama proved that the Japanese love beer, too. Another group of presidents were assigned instruments and they also proved they were musicians. More singing and enzian and beer and then back home. What a night!

Arriving at the Bayerischer Hof, most people decided on sleep. Bart Owells, my niece Joan and I wanted Bratwurst, sauerkraut and beer. On the way to the Bratwurst glockl, we ran into Ludwig Masch and a group of German S.C.C. members who joined

us. The sausages here are cooked first then grilled on beech wood fires. Six smoked, piping hot sausages and a tablespoonful of sauerkraut are one serving, plus bread and beer. Two servings were enough for me but not for some others. Boy, did they like the sausages—they were good indeed! As we drank and ate, the group decided to go to Schwabing, the Munich Latin Quarter. But it was past midnight and a full day of scientific meetings were ahead, so to bedie bed went my party and I.

Promptly at 8:30 a.m. at the Technische Hochschule the technical meeting re-convened with the presentation of the remaining eight technical papers.

Just before lunch, I met Professor Dr. H. Czetsch von Lindenwald who gave a paper on the influence of the HLB system on the activity of ointments. We knew of each others published work and exchanged views on the pharmaceutical curriculum in Egypt versus the U. S. A.

Walter Neumann (Dehydag) and I started for the Schelling Salon to eat lunch but were joined by others including Miss Tassia Zamidou of Athens who told us of the life and beauties of Greece.

The afternoon papers moved along on schedule. (Bob Marriott, Jerry Amsterdam and I did a taped interview for the U. S. armed forces radio during the afternoon too.) At 5:30 p.m. I invited Drs. Marriott, Masch, Neugebauer, Paukner and Storp, and Jerry Amsterdam to join me in a bit of German champagne (SEC) to celebrate the successful conclusion of the first I.F.S.C.C. sponsored congress and to wish Bob Marriott success during his tenure as the new I.F.S.C.C. president. Our party grew as more people drifted in.

At 7:30 (19:30) all congress attendants went to the Neues Rathaus on Marienplatz for a social evening of eating and drinking.

Gifts were exchanged by the various presidents of the different Societies, including fans and etchings by Japanese S.C.C. President Koyama. Then we all drank to Dr. Salfeld's 80th birthday. A happy ending to a successful congress.

The next day was Sunday. We assisted at High Mass at the Cathedral of Our Blessed Lady. I have never heard such a choir. There must have been a whole section of violins along with the organ, soloists and choristers. The church appeared to have suffered a hit during the war, for a large portion of it was rebuilt, retaining the Byzantine domes on the church spires.

Sunday afternoon, the Yanks toured the city ending with a visit at the Nymphenburg Palace, once the summer residence of Bavarian kings, now a museum and concert hall. The beautiful, formal gardens elaborated by Max Emanuel in 1701 are one of the most striking in all Germany. The architecture is Italian, French and baroque. The building itself is rich in carving, gilt, brocade, pantings, Chinese lacquer, stucco, Meisen porcelain and mirrors.

It was raining and it was chilly. Back at the hotel, various ideas about the evening were discussed. In the end we had dinner at the hotel and packed our bags to leave Munich for Barcelona by way of Zurich (train) and Geneva (Iberian Airlines).

Check List of Best Selling Technical Books

COSMETICS, SCIENCE AND TECHNOLOGY. The editorial board of this encyclopedia cosmetic work is made up of H. D. Goulden, E. G. Klarmann, and Edward Sagarin, executive editor. It is in five parts: I, Scope of Cosmetics (80 pages); II, Toilet Preparations (812 pages containing 800 formulas); III, Manufacture and Technology (214 pages); IV, Physiological Considerations (92 pages); plus preface and complete index. The sixty-five experts who contributed, are a "who's who" of cosmetic chemists in the United States and Canada. 1433 pages. Illustrated. Price $27.50.

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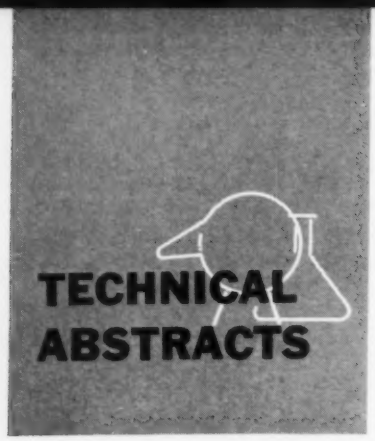


The Colloidal State As A Stimulus For Non-allergic Epithelioid Granulomas: Experimental Studies On Man With Pure Sodium Stearate And Palmitate.

By Harry J. Hurley and Walter B. Shelley.

(*digested from the JOURNAL OF INVESTIGATIVE* DERMATOLOGY, *Volume 33, October, 1959, No. 4., p. 203.*)

Recently the same authors described an allergic granulomatous reaction to zirconium present in deodorant sticks. This condition which was characterized by a sarcoid-type of granuloma, was shown to be the result of an allergic hyper-sensitivity to zirconium. It was the purpose of the report to describe the experimental production of non-allergic epithelioid granulomas in human skin. These experimental studies were performed on healthy adult male volunteers ranging in age from 20 to 62 years. Both Negroes and Caucasians were included. Of all the substances studied which included India Ink, sodium oleate etc., sodium palmitate and sodium stearate were exceptionally superior in their ability to induce consistently palpable local epithelioid granulomas in human skin. These granulomas developed within two weeks and generally had completely regressed clinically by six weeks. Unsaturated C_{18} soaps failed to induce palpable granulomas.

Why is it that ultra pure sodium stearate and palmitate were capable of inducing epithelioid granulomas with regularity? In vitro studies helped elucidate the special property or properties responsible for this distinctive granulomagenic effect. They are relatively insoluble in an aqueous medium as compared to the other compounds studied. Under darkfield microscopy it can be seen that they alone have the capacity to aggregate into long linear particles at the concentrations employed. Thus, they have the capacity to form colloidal systems, and they form micellar colloids more readily than do any of the other compounds studied. The presence of unsaturated bonds in the other C_{18} soaps increase their water solubility, and thus, they do not produce colloidal systems. Consequently, in the case of sodium stearate and palmitate it can be concluded that there has been a stimulation of reticulo-endothelial phagocytic activity. Non-micellar colloid forming compounds such as gelatin and gum arabic failed to induce epithelioid granulomas in human skin. It should be stressed that the stearate and palmitate granulomas are not allergic in nature and may be sharply contrasted with the allergic granulomas, such as the zirconium deodorant granuloma, on the basis of duration, concentration required to elicit the response, and incidence.

The steps involved in the formation of a local epithelioid granuloma in human skin by sodium stearate or palmitate follow this pattern:

In tissue fluid of plasma @ 38°C, sodium stearate and sodium palmitate tend to precipitate out as insoluble clumps. These clumps represent aggregates of "supermicelles" which are 10-200 microns in length, too large to be removed by the blood stream or lymphatics. As the tissue fluid bathes these insoluble masses, it is probable that there is the formation of some colloidal micellar particles at that interface of the foreign mass and the tissue fluid. A tissue response involving phagocytosis of the insoluble material by macrophages results in the formation of intracellular hydrophilic colloids. Water is drawn into the macrophage and the classical epithelioid cells result.

This study resulted in a speculation that will require further study with the knowledge that the fat in deeper organs contains fatty acids in concentrations of approximately 30%. If sodium salts of the fatty acids were formed by reduction of tissue pH, since it is known that tissue damage results in the reduction of tissue pH, we could have the requisite compounds necessary to produce a local epithelioid granuloma.

The Mechanism Of Action Of Rubefacients.

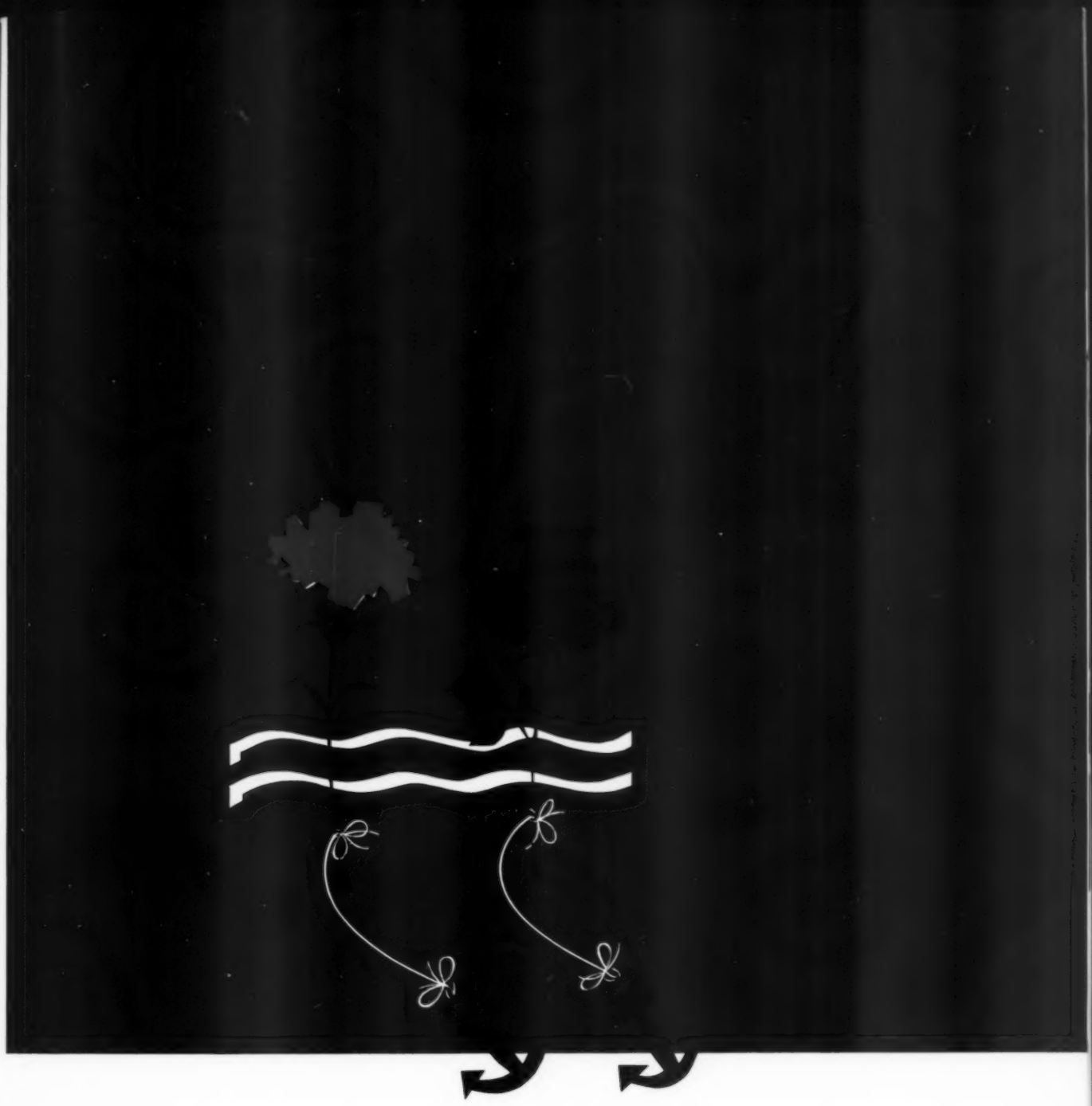
By George P. Fulton, Eugene M. Farber, and Anthony P. Moreci.

(*digested from the JOURNAL OF INVESTIGATIVE DERMATOLOGY, Volume 33, December, 1959, No. 6, p. 317.*)

An investigation of the microcirculatory effects of rubefacients and the mechanism of the action was discussed in this report. It was pointed out that the limitations of the nailfold circulatory bed and the absence in man of an adequate natural window made it necessary to use the semi-transparent cheek pouch of the Syrian hamster as the experimental site. Thus, the blood vessels could be studied readily by means of high power microscopy and micromanipulative procedures. The rubefacients studied were the esters of nicotinic acid, various essential oils such as mustard, wintergreen, clove, etc., and histamine solutions. Vasoconstruction was sometimes induced by barium chloride or by electrical stimulation using microelectrodes, since the arterioles of the cheek pouch frequently were found in a dilated state and, consequently failed to respond to rubefacients. Rubefacients were also applied to the entire surface of the cheek pouch of the hamster by a continuous irrigation method. It was discovered that treatment of the cheek pouch with xylocaine abolished the vasodilator response to rubefacients in 50% of the experiments.

Vasodilation was produced consistently by ethyl, methyl, n-hexyl, and tetrahydrofurfuryl esters of nicotinic acid applied topically to the walls of arterioles from micropipettes in concentrations ranging from 100% to 0.1% in mammalian Ringer's solutions. The essential oils and histamine solutions produced comparable degrees of vasodilation. The vasodilator response occurred in a more extensive portion of the arteriole than that in direct contact with the rubefacient as applied by micropipette. Although the degree of vasodilation was similar with various rubefacients, differences were found in regard to latent period and duration of response.

The types of blood vessels participating in the responses were arterioles and vascular sphincters. Rubefacients are effective at vascular sphincters, but not appreciably more so than on arterioles. Capillaries and non-muscular venules did not react to rubefacients. Arteriolar vasodilation was produced upon the application



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of solutions of histamine phosphate and histamine base. After concentrated solutions of tetrahydrofuryl nicotinate and ethyl nicotinate were applied to the hamster cheek pouch stasis developed almost instantaneously in the venules of the exposed tissue. Intravascular hemolysis occurred, characterized by profound color changes in the erythrocytes. In a few experiments, 100% solutions of nicotinic acid esters and also mustard oil produced severe vascular and tissue injury. Thus, the characteristics of the vasodilator responses suggest mediation by a nerve conduction mechanism.

Physiological and Pathological Changes in Skin From Sunburn and Suntan.

By Allan L. Lorincz.

(Digested from the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION July 16, 1960, Volume 173, pp. 1227-2131.)

It is pointed out in this article that due to the amount of solar radiant energy reaching the earth's surface, a normally white skinned individual can develop a sunburned redness after an exposure time of twenty minutes in a direct summer midday sunshine. An exposure time of over three hours can result in a painful blistering sunburn. Only wavelengths over 2900A are involved in the development of sunburn. Numerous factors such as latitude, time of day, time of year, etc., influence the amount of sunburn producing wavelengths.

The erythema-producing wavelengths of sunlight are essentially entirely absorbed in the outer avascular epidermis. It is the current hypothesis that the primary photochemical metabolites are probably ultraviolet-altered proteins but nothing has been definitely established as yet. Erythema usually appears within two or three hours. The latent period proceding sunburn is strongly temperature dependent. It seems that the primary photochemical product or products set off secondary, highly temperature dependent reactions leading to the formation of the vasodilator material. It is thought that photochemical, protein-bound free radicals might give rise to longer persisting biologically active mediators such as organic peroxides. If exposure to the sun is excessive, edema and blistering of the skin may develop. With the development of erythema, dilated small blood vessels appear in the upper dermis and leukocytic infiltration begins to appear there. After twenty-four to forty-eight hours, there are cellular degenerative changes and intracellular and intercellular edema in the upper portions of the prickle cell layer. After five to seven days there is usually a degree of thickening of the prickle cell layer and the stratum corneum. The tanning of the skin can be divided into three classes—the immediate, delayed, and true tanning effect. The immediate tanning effect is brought about by the long-wavelength ultraviolet spectrum extending between 3000-4300A. The phenomenon is believed to result from the direct photo-oxidation of relatively pale tan reduced melanin to darker, oxidized melanin. A delayed tan results several days after solar exposure and consists of an upward migration of melanin granules in the epidermis as a result of their dispersion and retention in the dendrites of the melanocytes. The true tanning effect is the result of the stimulation of new formation of melanin in the skin brought about the same ultraviolet spectrum which causes sunburn.

Window glass as well as many sunscreening preparations such as those based on para-aminobenzoic acid effectively filter out the erythema-producing wavelengths of sunlight yet permit passage of longer pigment-darkening rays about 3200As. On the other hand, endocrine and

other factors which generally promote melanization also tend to enhance suntanning. Usually an acquired tolerance to sunshine develops after repeated exposures mainly because of increased melanin pigmentation and thickening of the horny layer. Sweat also gives some protection to the skin because it can absorb ultraviolet radiation of wavelengths shorter than 3,300A.

The prime medically accepted beneficial systemic effect of solar exposure for man is the resulting production of Vitamin D. Systemic circulatory changes may occur, such as a reduction of both systolic and diastolic blood pressure. Other changes which have been correlated with ultraviolet irradiation are 1) a decrease in serum cholesterol, (2) low, fasting-blood-sugar level and flat, glucose-tolerance curves, and (3) a decrease in serum tyrosine. In children, reduction of blood phosphatase levels and elevation of calcium values have been reported.

pH and Antifungal Activity. David Buckholder.

Fatty acids exert a fungistatic and fungicidal action on dermatophytes. Optimal activity is associated with low pH, whether for inhibition of growth or for inhibition of respiration. Various authors have suggested that at any pH the antifungal activity is due to the undissociated molecule alone. Accordingly, the effect of pH on the antifungal activities of undecylenic acid (a long chain fatty acid) and its calcium salt was studied, with particular attention paid to the concentration (calculated) of undissociated acid at each pH. The antifungal activities of both the acid and salt were similar when tested against a variety of pathogenic fungi at pH 4.5 to 6.0. Above pH 6.0 the calcium salt was inactivated to a greater extent than the free acid. Within the limits of experimental error, the minimum inhibitory concentration of undissociated undecylenic acid remained constant over the range pH 4.5 to 6.0 From pH 6.5 to 9.0 with Trichophyton mentrogrophytes as the test organism, the antifungal activity of undecylenic acid did not bear a simple relation to the concentration of undissociated acid. *Thru Prince, H. N., J. Bact. 78:788 (Dec.) 1959.*

Side-Effects of Drugs.

An incidental or undesirable effect from a drug does not necessarily make it a side-effect—with the undesirable connotation that the term bears. Some auxiliary effects of drugs are merely extensions of their normal and physiological effects. *Thru Monthly Bulletin of Di Cyan and Brown, No. 93, March, 1960.*

The Irritating Effect of Surface-Active Agents on the Eyes of Rabbits.

The author has shown that fatty alcohol sulphates and alkyl aryl sulphonates are irritants to the eyes of rabbits. The fatty acid-protein condensates do not cause any irritating effects over the same ranges. The irritating effect of the first class of compounds can be considerably reduced by combining them with the products of protein hydrolysys or their condensation products. *Thru Journal of the American Oil Chemists' Society, Vol. 37, No. 7, p. 382, July, 1960.*

British Patent No. 839,923: Permanent Waving of Hair—using aa'-dimercaptoadipic acid. Gillette Co. 13.3.58 as 8067/58, clg. 27.2.57 (USA).

Although a variety of mercaptans has hitherto been proposed for use in the cold permanent waving of hair, those mercaptans contng. two carboxyl groups in the molecule, such as mercapto-succinic acid and dimercaptosuccinic acid, have been found to be ineffective as

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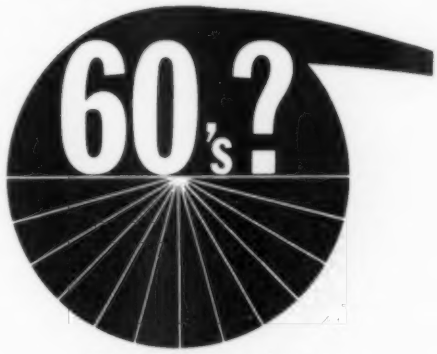

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waving agents, failing to produce satisfactory waves. Dimercaptosuccinic acid is also very unstable in aqs. solution. It has now been found that the homologous a,a'-dimercapto-adipic acid, its salts, esters and amides are effective waving agents for the cold permanent waving of hair. Since this member of the series of dicarboxylic acids has also been found to be nontoxic (Danielli et al., *Biochemical Journal, 41,* 325 (1947), it is unique in its utility as an agent for the cold permanent waving of hair. Moreover, dimercaptoadipic acid and its derivatives are stable in dry solid form, making it possible to provide hair waving compositions either in the form of aqueous lotions or as dry solid compositions adapted to be dispersed or dissolved in an aqueous alkaline medium to form a lotion. *Thru Derwent Organic Patents Bull., 197, Gp. 5, p. 18 (1960).*

Brit. Patent No. 838,018: Soap Preservatives—including some new hydrazones. Unilever Ltd. 20.8.57 as 26227/56, clg. 28.8.56 (GB).

It has been found that the tendency of soap compositions to deteriorate in odour during storage may be retarded by the incorporation of a hydrazone of formula $RXNH.N = CR_1R_2$ (where R_1 and R_2 are alkyl, aryl or aralkyl groups; R_2 is H or an alkyl, aryl or aralkyl group, R contains not more than 20 C atoms and X is -CO or $-SO_2$). The hydrazone substituents may be further substituted or unsaturated. Suitable compounds are those having molecular weight of 150-500 e.g. N-benzoyl-N'-isopropylidene hydrazine or acetone lauroyl-hydrazone. New compounds such as N-lauroyl N'-heptylidene hydrazine or N-p-toluenesulphonyl-N'-(2:3:4'5:6-pentahydroxyhexylidene) hydrazine (which may be obtained e.g. by condensing p-toluenesulphonyl hydrazine with glucose in aqs. methanol) may also be used and a suitable amount is 0.1 to 1% of hydrazone based on soap. (22.6.60; CO7d; C11d) *Thru Derwent Organic Patents Bull., 196, p. 5, p. 2 (1960).*

Brit. Patent No. 838,448: Royal Jelly—method of preserving it. Golirelli, M. 26.10.56 as 32723/56, clg. 28.10.55 (Italy).

Royal jelly is preserved by dissolving it in water, buffering the soln., filtering and freeze-drying. The buffering agent may be citric acid, and sodium citrate or Na HPO. Protein is denatured by the addition of colloids and the filtered soln. is subjected to freeze-drying at -5 to -10°C. to bring the moisture content to 0.1%. (22.6.60; A.01.n.) *Thru Derwent Organic Patents Bull., 196, p. 5, p. 4 (1960).*

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Lab glassware washer

A new medium capacity glassware washer has been developed expressly for smaller laboratories. Perforated stainless steel baskets carry the glassware, firmly held to prevent breakage. The washing cycle is followed automatically by preset programs. **Fisher Scientific Company.**

New functional polymers for cosmetics

Two new resins, called Devlex 130 and Devlex 515, have been developed which offer particular advantages in formulations for hair grooming and skin lotions. They display a high affinity for skin and hair, and the resulting films are clear, flexible, free of odor, and relatively non-hydroscopic. **Dow Chemical Company.**

I.P.A. deodorants

A series of highly effective iso propyl alcohol deodorants have been developed. They are incorporated in a proportion of 1 to 2 grams to one gallon of I.P.A. **Perry Bros., Inc.**

Pressure sensitive label for plastic containers

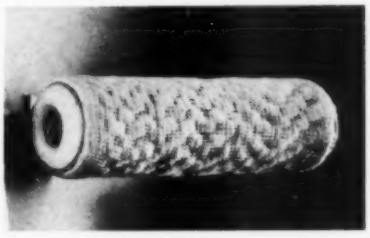
This label utilizes a cold-seal process which makes possible the application of a permanent, full-color label to squeeze, semi-rigid and rigid plastic bottles by manual or high-speed automatic equipment.

Through this unique process, the printed image, acetate faced, is suspended between a special adhesive which seals and locks in the printed copy from any outside harmful influences. It is impervious to cosmetic materials, pharmaceuticals, water, brine, alcohol, solvent, alkalies and many acids. It is not a paper label and cannot be soaked off deliberately or by accident. The finest quality multi-color printing may be used; offset, letterpress or rotogravure. **National Laminating Sales Co.**

Sandela GD®, introduced, sandalwood oil replacement

Sandela GD is a truly functional sandalwood-like chemical which is available in commercial quantities at a low stable price, at present less than 1/3 the cost of sandalwood oil. It is a remarkable product having all the desirable characteristics of sandalwood oil. It has been evaluated in a variety of functional products such as soaps, detergents, cosmetic preparations and aerosols and found to have properties which permit the development of notes heretofore attainable only with natural sandalwood oil.

Sandela GD can also be used in perfume formulations exactly the same as the natural oil. It has excellent residual properties which are superior to sandalwood. **Givaudan-Delawanna, Inc.**



New liquid filter cartridge

A filter cartridge, available with an optional stainless steel core, is now suited for filtering installations where nearly any chemical or corrosive condition exists.

The design of the new cartridge uses custom-engineered synthetic fibers of selected diameter. Consistent cartridge density throughout the micron range is assured and because of the unique construction of the cartridge, increased solids capacity, lower pressure drop and a more uniform performance are assured.

These filter cartridges provide "depthwise" filtration rather than "surface" filtration and the filtering action takes place through the filter media bed. **American Felt Company.**

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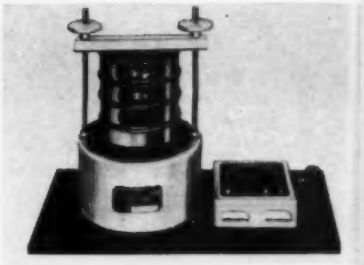

Laboratory-size vibrating screen

A new laboratory-size vibrating screen has been developed that is quiet and readily portable. It is designed for research laboratory, production-control labs, and pilot-plant use.

The unit features a unique vertical-horizontal pulsating action, provided by two independently driven rotating shafts operated at adjustable speed differentials. Each motor is rheostat controlled so the pulsating action can be readily adjusted for different materials.

This unit is suited for screening granular, crystalline, powdery, or other dry materials, even through 200, 325, and 400 mesh. In addition, it gives excellent results screening slurries and fluids.

The unit is also available in 8, 12 and 18-in. sizes. **The C. O. Bartlett & Snow Company.**

Plastic imprinting

A portable conveyor-line attachment for imprinting the bottom of plastic bottles employs a new kind of ink that adheres permanently to the plastic surface.

Set up at any convenient point on the production line, the coder automatically separates and holds the bottles as they are imprinted, and discharges them to continue their travel on the conveyor. Feed may be continuous or intermittent, and product flow is not interrupted in any way. Line speeds of up to 600 bottles per minute can be maintained. **Adolph Gottscho, Inc.**

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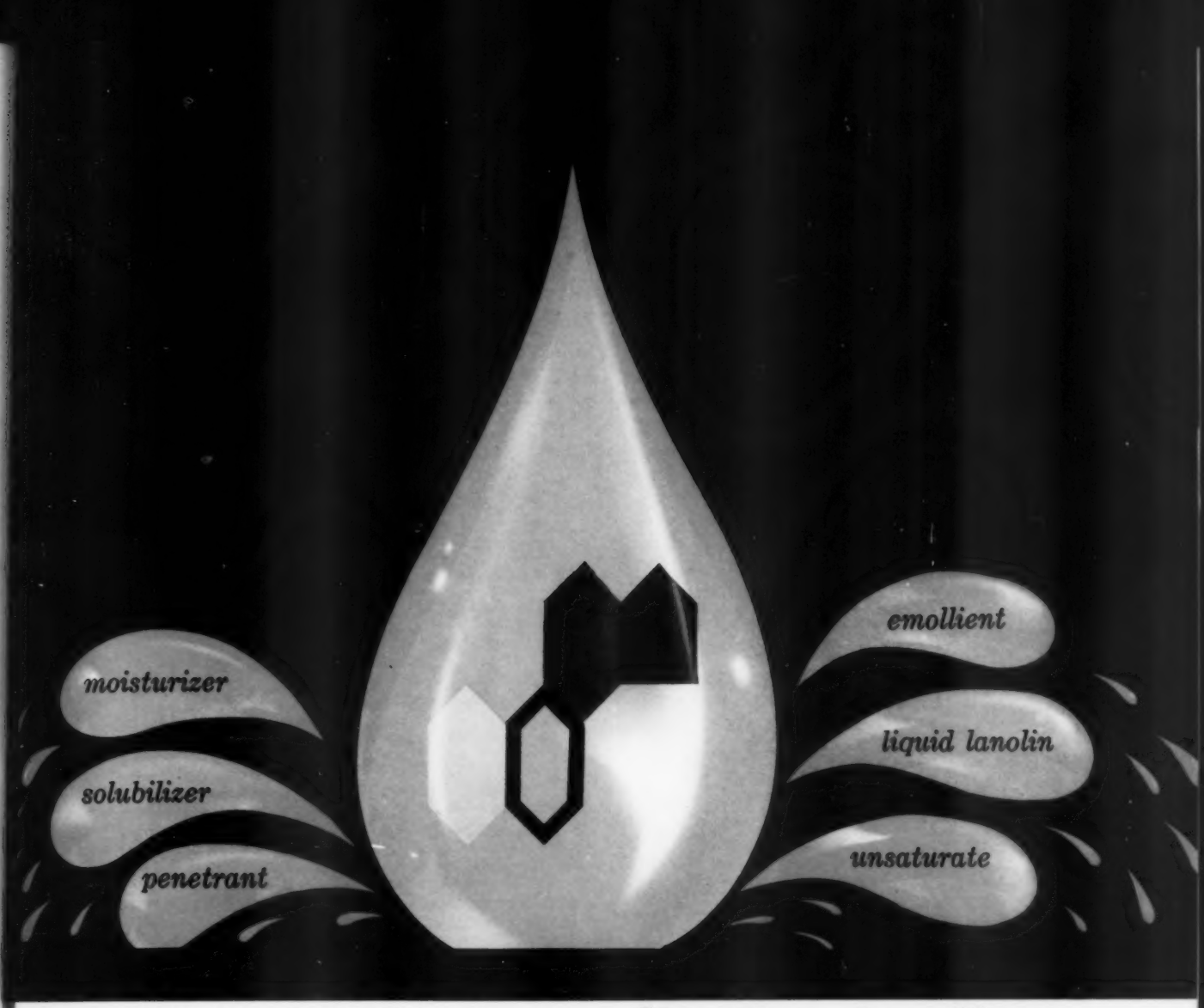

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PACKAGING & PROMOTION

1

1—Corday

Two hundred metered sprays of perfume are contained in Corday's new Spray Parfum. This purse flacon was introduced recently in the company's "Toujours Moi", "Fame", "Zigane", "Trapeze", "Toujours Toi", "Possession", and "Jet" fragrances. The cylinder is silver with a contrasting gold band and the flacon is packed in an attractive box.

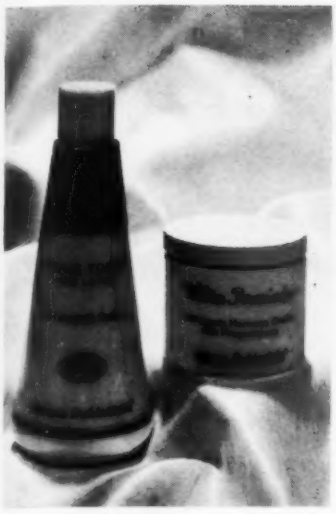
2

2—Helene Curtis

A hair-care special is being offered by Helene Curtis on their Creme Rinse and their Shampoo Plus Egg. Forty cents off each bottle reduces the price to $1.19 per bottle. A special label on the bottles announces the savings and a stacking card will key the displays with an eye-catching "Save 40¢".

3—Helena Rubinstein

Treatment products containing hormones are being offered at sale prices in an annual promotion by Helena Rubinstein. "Young Touch" hand lotion with estrogens is on sale at half price and "Ultra Feminine" hormone cream with progesterone will be sold at a special price for a limited time. This campaign will be backed up by national advertising running from December 25th through January 28th. Point-of-sale displays and direct mail to cosmeticians will round out the promotion effort.



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4

5

4—Romel Cosmetics

A new teenage line of cosmetics is being distributed by Romel Cosmetics of New York, Inc. Called "Tweenage" the products will be sold in teen specialty shops, drug and department stores and beauty shops. The basis of the line is an attempt to appeal to the 12 to 16 group with a light, natural effect in cosmetics along with complexion care treatment items.

5—Helene Curtis

A half ounce bottle of "Tender Touch" bath oil is being offered by Helene Curtis as a premium with the purchase of "Spray Net" in the $1.35 size. This consumer offer will be promoted on four network television shows. The packaging consists of a special "boot" which fits over the top of the aerosol container and has an extension to hold the bath oil bottle.

6

6—Bonne Bell

Bonne Bell has introduced a treatment shampoo as a companion product to the company's facial cleanser, in the "Ten-O-Six" line. The shampoo is recommended for dandruff treatment, over-oily hair and sensitive scalps. The product is also being promoted for use by the whole family.

7—Northam Warren

"Nail Flex" is being marketed as an aid to maintaining healthy fingernails by Northam Warren Corporation. The company combines cholesterol and white iodine in this latest Cutex cosmetic treatment. The purse-sized polyethylene tube is printed in three colors.

7

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Johnson Publishing Company introduces "Beauty Salon"

The fourth Johnson Publishing Company magazine and its first non-consumer publication, was introduced this month when *Beauty Salon* made its national debut. The new publication, with a controlled circulation of 25,000, had 68 pages in its inaugural issue. The new trade publication is edited by Rose L. Jourdain.

Publisher John H. Johnson says that *Beauty Salon* is "dedicated to the approximately 100,000 Negro beauticians throughout the United States." Johnson Publishing Company also publishes *Ebony* and *Tan*.

Aerosol Technology course

St. John's University of Jamaica, New York, is giving two courses in aerosol technology, one a lecture course for three credits, and a laboratory course for two credits.

The objectives of these courses are to provide fundamental training on a graduate level for experienced personnel who are desirous of training in the physio-chemical and other aspects of aerosol technology and wish to extent their area of knowledge. The courses will also give those with backgrounds in related chemical fields an opportunity to enter the aerosol field.

For further information write Department of Pharmaceutical Science, St. John's University, Jamaica 32, N. Y.

Dorothy Lamour, Inc., acquires 50% of Paramount Cosmetics

Dorothy Lamour, Inc., publicly owned company which manufacturers cosmetics and owns-operates-franchises beauty salons, has acquired 50% ownership of Paramount Cosmetics Co., 221 W. 17th St., which manufactures cosmetics and toiletries. The Paramount acquisition gives Lamour added factory and shipping facilities plus trained personnel in the cosmetics development and manufacturing field.

SKF's unique public relations program

One of the most fruitful efforts to bring the achievements and the complex workings of the pharmaceutical industry to public attention reached a milestone last week with the 1000th presentation of the speech "Prescription for Tomorrow."

The talk, which details the "medical revolution" which has taken place during the last 30 years and the role the industry has played in this progress, is the focal point of an ambitious speakers program initiated by Smith Kline & French Laboratories, Philadelphia drug firm, in June, 1959. Since that time the speech has been heard by approximately 50,000 members of civic, fraternal and social groups throughout 48 states and Canada.

Aerosol packaging winners at the CSMA meeting

The grand award as the best package entered in the 1960 Aerosol Packaging Competition, conducted by the Chemical Specialties Manufacturing Association, was won by Sprayclean, a product of Durazone of England. This product also won honors as best in two categories.

In the category of perfumes and colognes, Espirit de Parfum, by Faberge, Inc., filled by Aerosol Techniques, won top honors.

Lueders celebrates 75th Anniversary

George Lueders & Co., Inc. celebrated its 75th anniversary with a dinner-dance held October 14 at the Hotel Astor in New York City and attended by 90 guests. Frederick J. Lueders, president of the company, was presented with an oil painting by company officers and directors, and Lueders employees presented him with a silver ice bucket. Guests received silver and glass ash trays as souvenirs.

Givaudan-Delawanna, Inc. held its annual Fall reception and cocktail party November 10th, and visitors from the soap, cosmetic, perfume and allied industries met Mr. Andre Givaudan and his son Mr. Xavier Givaudan who were visiting this country at that time.

Pictures taken during the Scientific Section meeting of the TGA.

Top; William Lambert and Steve Mayhem. Second; Jack Melody, Polak's Frutal Works, John Hancock, Warner-Lambert Products, Charles J. Dwyer, Bristol-Meyers Co., and Bernard Polak, Polak's Frutal Works. Bottom; Nathan Fretz, Roubechez, Robert Montgomery and Carl Meyer of Verona Aromatics.

Pictures taken during the Scientific meeting of the SCC.

Top: Dr. J. George Fiedler, Strand Cosmetics, Centa Isermann, Van Dyk, and John Nugent, Noville Essential Oil. Second, Sab Strianse, Yardley of London, Dr. Oliver Marton, Shulton, and Stanley Allured, American Perfumer. Bottom, E. R. van Liew and George H. Blake, Givaudan-Delawanna.

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Dr. Margit Vanyur will join Old Empire's laboratory staff in charge of quality control of the pharmaceutical department. Dr. Vanyur has been an analytical chemist in charge of quality control of pharmaceuticals at Standard Drug, Inc.

Louis Amic has been elected president and chief executive officer of Roure-Bertrand Fils and Justin Dupont of France. Mr. Amic, who was managing director of the company, succeeds the late Jean Fabre.

William F. Tiefenwerth has been named vice president in charge of marketing for the Lady Esther division of Chemway Corporation. He has been advertising and merchandising director for the past two years.

John R. Hulten has been named specialty chemicals marketing manager for Union Carbide Chemicals Company and **E. E. Husted** has been appointed fluorocarbons marketing manager of the division of Union Carbide Corporation. **Thomas M. Hartley** will succeed Mr. Husted as sales manager UCON propellants.

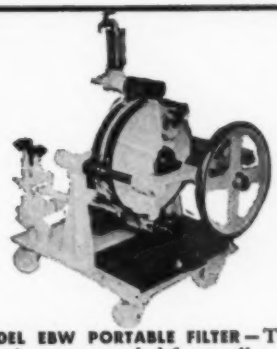
Philip Chaleyer, internationally-known perfumer and expert in aromatic products will serve Rhodia, Inc., New York, in an advisory capacity on research and development projects. Mr. Chaleyer was head of of his own perfume firm for many years.

MacNair receives CSMA award

Ira P. MacNair, President of MacNair-Dorland Co., New York, has been selected to receive the 1960 Achievement Award of the Chemical Specialties Manufacturers Association.

In 1925 Mr. MacNair was a founder of his present company and published the first issue of *Soap* magazine, known today as *Soap and Chemical Specialties.*

He was a member of the National Association of Insecticide and Disinfectant Manufacturers (NAIDM) which was the forerunner of the present Chemical Specialties Manufacturers Association for which he served as secretary from 1936 to 1941 and has since been associated almost continuously in various executive capacities.



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News of the American Society of Perfumers

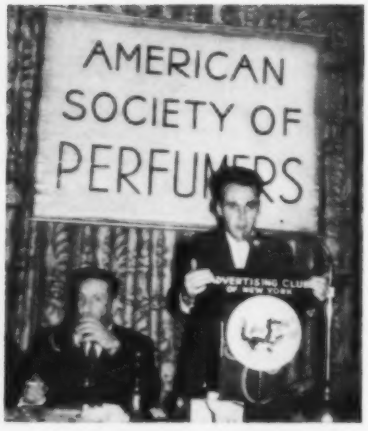
The American Society of Perfumers had as its speaker at the October meeting one of their own members, Steffen Arctander, Perfumer for International Flavors and Fragrances, New York. Dr. O. L. Marton reports the meeting as follows:

"The Danish born speaker, known for his contributions to the essential oil and perfume literature in this country as well as abroad, spoke under the modest title "The Seventh Voyage". He reported on his seventh trip to Africa earlier this year, which had lead him to Morocco's interior. Illustrated by beautiful color slides, his interesting report held the audience spell-bound when he outlined and illustrated the essential oil region. Yet there is only five weeks work a year for the Moroccan rose factories, where at harvest time 46 tons of rose flowers a day have to be processed 24 hours after picking. Besides the flower area there are further 375,000 acres of Moroccan soil covered with cedar trees, all South of Casablanca. The trees grow in the Atlas Mountains, at an altitude of from 7,000 to 8,000 feet. Moroccan Geranium Oil now practically replaces the Algerian oil, and much of the Moroccan oil is now sold as Algerian.

"Arctander's report also included the more limited plantations of tuberose and jasmin, lavender and lavandin, and clary sage, besides some culinary herbs and spices also processed in this North African country, such as thyme, pennyroyal, peppermint, estragon and spearmint. The latter is used as a native tea, in mixture with Chinese tea.

"The mild climate, devoid of hurricanes, also allows the collecting and processing of oakmoss and labdanum, as well as an African type mimosa among smaller quantities of other raw materials for the perfume industry.

"As a tribute to the pioneer of the Moroccan perfume plant industry the speaker paid homage to the recently deceased Pierre Chauvet. Very striking were the beautiful color shots shown by the speaker, of the fertile Dades valley, which extends over 70 miles in desolate desert land, of the modern Aromag-Chiris factory at El Coumt, built like a fortress for safety reasons, as well as of the CAPP (Compagnie Africaine des Plantes a Parfums) operations at El Kelaa-des-M'Gounda.



Dr. J. S. Jellinek speaking before the Society of Perfumers, with Bernard Polak, president of the Society.

"The arm chair trip the audience took on the screen during this very informative evening contrasted sharply with the actual automobile trip the speaker took in person, with all the hazards of driving through uninhabited, uncultivated desert land, over roads not worthy of this name, spiced with flat tires, car breakdowns, meager food rations, etc., and topped by a scorpion bite, from all of which the globe-trotting perfumer emerged unharmed, to acknowledge the well deserved, rich applause of this expert audience."

At the open meeting November 16th, the speaker was Dr. J. S. Jellinek, of Polak's Frutal Works, Inc., Middletown, N. Y. He spoke to an audience of 150, on the subject "Evaporation and the odor quality of Perfumes". An abstract of his talk follows:

All odor perception depends on evaporation of odorants. Anything that effects the rate of evaporation of its ingredients affects the odor of a perfume. Ususally not only the intensity but also the quality of the perceived odor is changed because a given force or influence does not change the evaporation rate of all ingredients of the perfume to the same extent. Among the factors that affect evaporation rates the following are of special interest to the perfumer:

(A) Electrostatic attraction among the different ingredients of a perfume. (This accounts for fixation" and "blending" effects.

(B) Electrostatic interaction between perfume materials and the medium in which the perfume is incorporated.

(C) Attractive forces between perfume materials and skin or hair keratin. These, coupled with the effects on evaporation of body warmth, sebum, water and water vapor, greatly influence the behavior of perfumes on the skin and the hair.

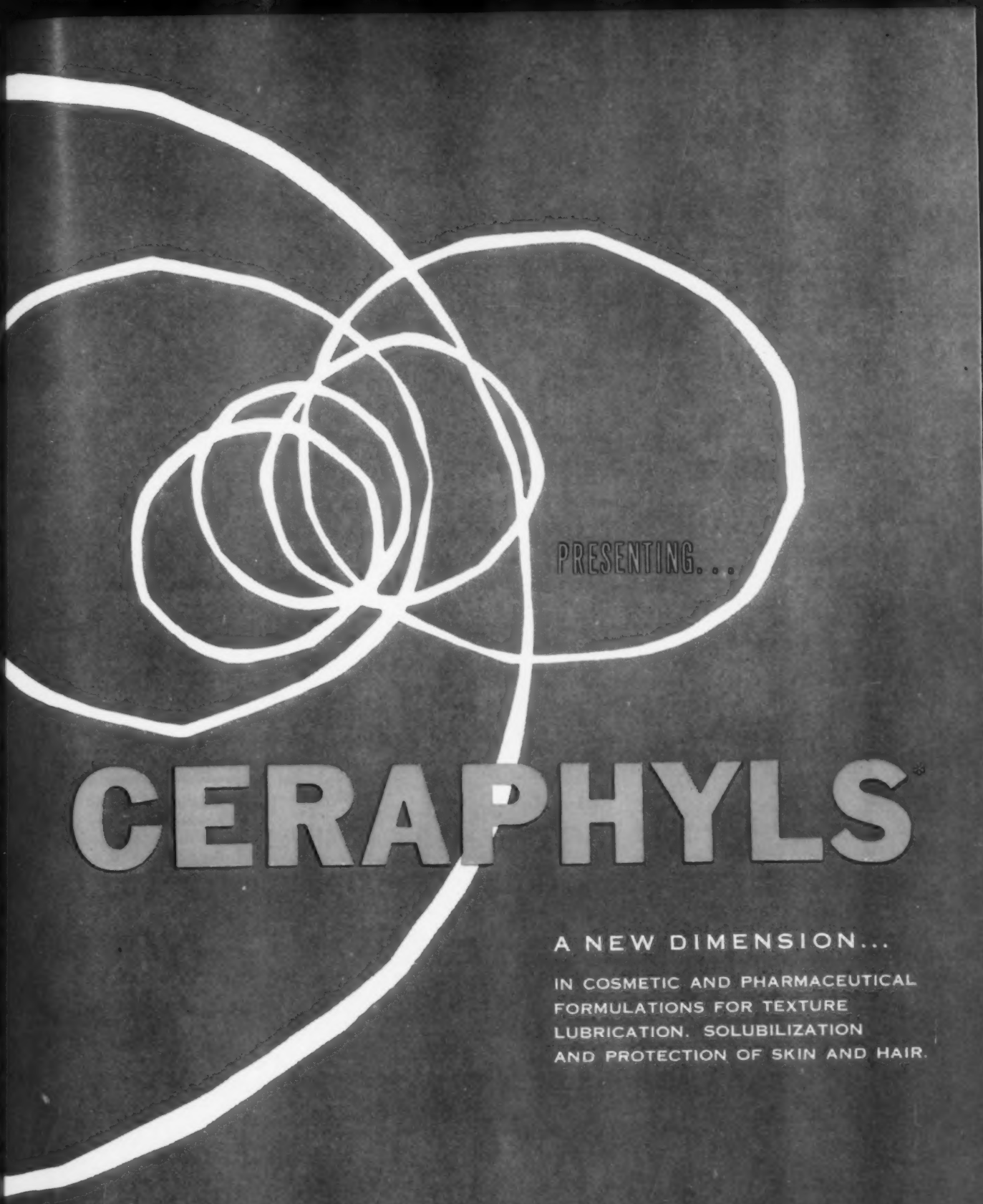
Experiments were described which demonstrated that the above mentioned forces and influences may markedly affect the odor quality of a perfume blend.

News of the Societies of Cosmetic Chemists

The First Annual Scientific Seminar sponsored by the New England Chapter of the Society of Cosmetic Chemists attracted more than eighty people to the University of Connecticut's School of Pharmacy on November 3, 1960.

During the day-long program planned by Dr. Richard Faust, six papers were presented and discussed. Dr. Nevis E. Cook, Boston District Director of the Food and Drug Administration, first addressed the group on "Cosmetics and the Problem of Safety."

The next speakers introduced by the moderator, Dr. Chase B. Jones, Chief Biochemist of the Gillette Safety Razor Company, were Dr. George E. Osborne, Professor and Chairman of the Department of Pharmacy at the University of Rhode Island's College of Pharmacy and Dr. Robert Gerraughty, Assistant Professor of Pharmacy at the same school. Their paper was on the "Protective Barriers for the Skin." Dr. Bernard Appel, Chairman of the Department of Dermatology at Tufts Medical School then spoke on "The Inherent Prop-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Afternoon speakers at the First Annual Scientific Seminar of the New England Chapter of the Society of Cosmetic Chemists. From left to right: Dr. Charles J. Kensler vice president of Arthur D. Little, Inc.; Dr. Irving H. Blank, Associate in Dermatology, Harvard Medical School; and Dr. I. I. Lubowe, Associate Dermatologist, New York Metropolitan Hospital Center.

erties of the Human Skin."

Those attending the roast beef luncheon heard speeches by Dean Hewitt of the University of Connecticut's School of Pharmacy and by Jesse H. Starkman, Chairman of the New England Chapter of the Society of Cosmetic Chemists.

First of the afternoon speakers was Dr. Charles J. Kensler, vice president of Arthur D. Little, Inc., who told the group about the "Problems of Chemical Carcinogenesis."

"The Interpretation of the Clear Zone Technique for Measuring Bacteriostatic Activity" was next discussed by Dr. Irving H. Blank, Associate in Dermatology at the Harvard Medical School.

Dr. I. I. Lubowe, Associate Dermatologist at the New York Metropolitan Hospital Center, concluded the presentation of papers with comments of "Topical Agents for the Treatment and Prevention of Disorders of the Scalp."

Concluding the day's activities was a tour of the University of Connecticut's new science-research building.

The new officers of the Chicago Section of SCC are; Front row: Lura S. Rickets, The Toni Co.—Secretary; Wm. H. Walker, Fuller Products Co.—Chairman. Back row: Stillman R. Goff, The Toni Co.—Chairman-Elect; Wm. D. Ackley, International Flavors & Fragrances, Inc.—Treasurer.

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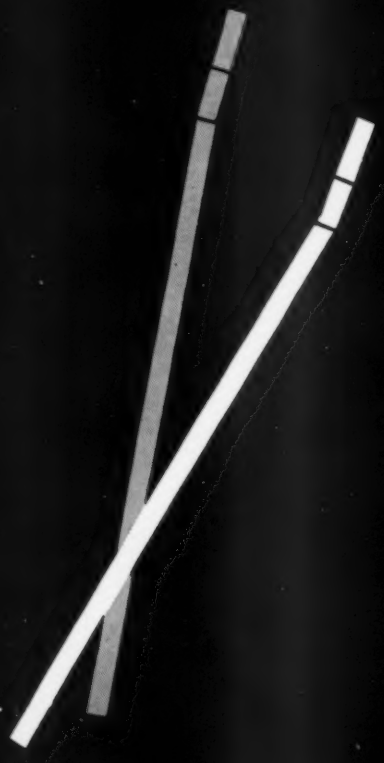

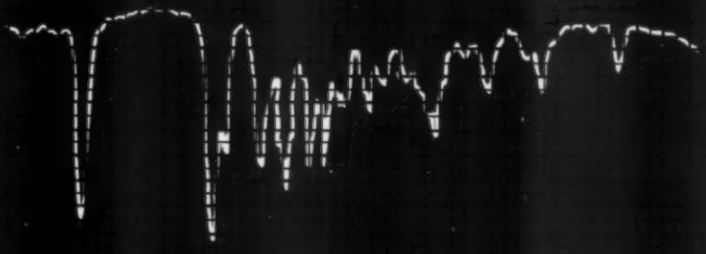

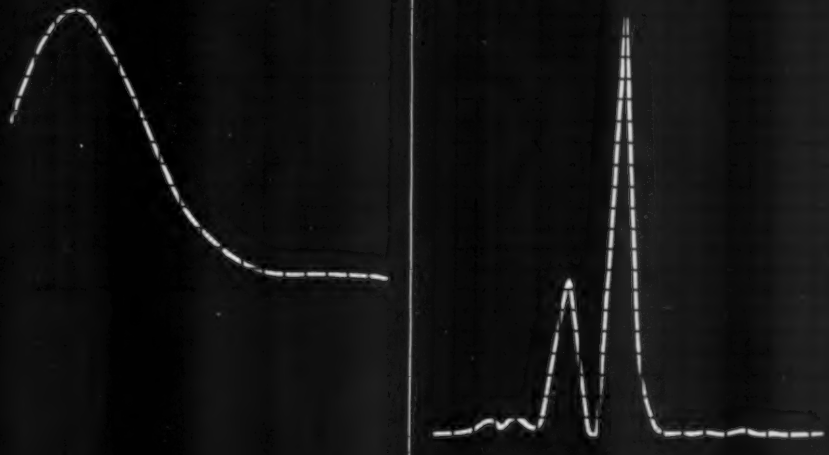

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